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Volume XXVII
The American City Magazine
443 Fourth Avenue, New York

Index to Subjects, July—December, 1922

Beginning with this volume, articles are indexed by title under main classification and in the order of publication. The same principle of sequence of publication is followed in the city index. Cross-indexing is reduced as much as possible.

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Constantinople's Burnt Areas Provide Unique Opportunity for Large-Scale Replanning

By Dr. Francis W. Kelsey
Ex-President, American Institute of Archaeology

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AMERICANS find it easy to believe that the United States and Canada afford opportunities for city planning without a parallel elsewhere, on account of the recent origin and rapid development of the centers of population, and the temporary character of so large a part of the construction. Nevertheless, no American city of large size and strategic location at the present time more earnestly invites the attention of those interested in this field than Constantinople, Turkey.

In the European quarter of Constantinople there are buildings not unlike those of the cities of northern Europe. But in Stamboul, the heart of the Turkish city, and other native quarters, wood is extensively employed and the construction is of the flimsiest. In the hot summers the wood becomes as dry as tinder, and strong winds from the north easily fan the most insignificant blaze into a conflagration. Until recently the facilities for fighting fire were totally inadequate, and the firemen were more interested in extorting money from those whose property was endangered than in putting out the fires.

Hence it has come about that in recent years approximately one-fourth of the area of Stamboul has been burned over. The burnt areas—not to make account of small fires—aggregate 2,089,000 square meters out of a total area of 8,500,000 square meters. Other fires have cleared extensive regions in the northern part of the city, and also in Scutari, which is on the east side of the Bosphorus and not shown on the Plan.

The relation of the burnt areas to the rest of the city may be seen at a glance. The accompanying Plan with the areas marked was prepared for the United States High Commissioner, Rear Admiral Mark L. Bristol, and is published with his permission. It is evident that the destruction has been caused by a series of seven great conflagrations.

The Burned Areas

The first of these fires desolated the area in Stamboul marked "A" on the Plan. It started on August 26, 1908, and destroyed 1,500 buildings. The second great fire commenced July 24, 1911, in the smaller of the two areas marked "B" and leaped across to the larger area; it burned 2,463 buildings. The following day the area marked "C," in the Jewish quarter, was burnt over. The area marked "D" was burned June 3, 1912.

The largest burnt area in Pera is that marked "E" on the Plan. The fire started on July 26, 1915, a short distance south of the German Embassy, which occupies a dominating position on the Pera ridge, and spread southward, roughly paralleling the shore of the Bosphorus. It consumed 1,400 buildings. The most recent fire on the east side of the Golden Horn broke out on June 21, 1919; the burnt area is marked "G."

The most fearful conflagration of all commenced on June 13, 1918, and swept over the area marked "F." It cleared a broad strip from near the edge of the Golden Horn southward over the peninsula through the heart of Stamboul. It destroyed 8,000 buildings and left desolate 1,100,000 square meters, slightly more than one-eighth of the entire area of Stamboul devoted to buildings.

These areas of destruction by fire give to Constantinople an appearance in some respects resembling that of European cities which were partially destroyed in the war. There is, however, this difference. In the war-wrecked cities of Europe—with some exceptions—walls of buildings are still standing; in Constantinople there are whole blocks in which so little stone or brick was used in construction that one looks across an almost open space.

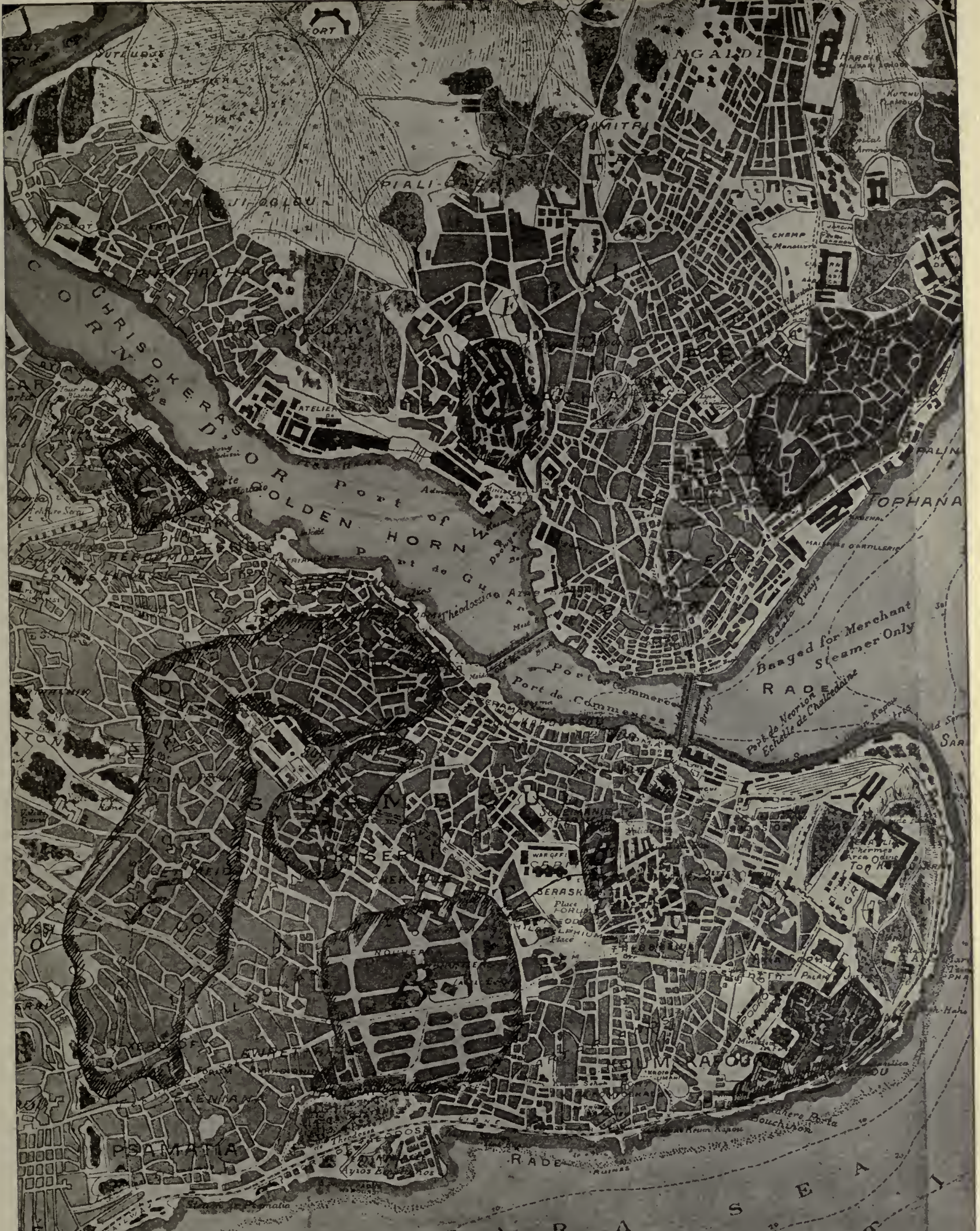
What About Rebuilding?

At first thought one wonders that almost nothing has been done in the way of rebuilding. Here, again, several causes have contributed to the same result. It must not be forgotten that in the years preceding the Great War, conditions in Turkey were much disturbed, first by revolution, then by the Italian and Balkan wars. In the meantime the costs of materials and construction have so increased that, according to the estimate of an expert, about half the owners of the real estate in the fire-swept districts are quite unable to raise the money needed for rebuilding. But if the requisite capital were at hand, it is by no means certain that rebuilding would now be resumed, because of extreme uncertainty in regard to the future administration and development of the city, and the lack of a definite plan.

The destruction of habitations in Constantinople has been accompanied by a notable increase in population. In 1908 the number of inhabitants was estimated as more than 800,000 but less than 900,000. No exact statistics are available, but conservative computations place the total number of inhabitants at the present time at

RAMSHACKLE WOODEN CONSTRUCTION TYPICAL OF CONSTANTINOPLE

When a blaze starts in a tinder pile like this, it is almost impossible to prevent its becoming a conflagration



PLAN OF CONSTANTINOPLE - SCUTARI KADI-KEUÏ

BY ALEXANDRE M. RAYMOND. ~~Architect~~ *Ex Inspector y the British-Egyptian P.W.D.*

PLAN DE CONSTANTINOPLE SCUTARI-KADI-KEUI

PAR ALEXANDRE M. RAYMOND. Architecte

SCALE / ECHELLE 1/12.000 — 0 100 200 300 400 500 M 750 1000 M 1500 2000 2500 about 1,200,000, though it is suggested that the total may run as high as 1,250,000. The city is crowded with refugees and foreigners.

The resulting condition has brought indescribable hardships to the people of the city. While the population has increased 30 per cent or more, its housing accommodations have been reduced, on a conservative estimate, at least 15 per cent below the total of 1908. The congestion of living and of street traffic is almost unbelievable to one who has not seen it.

In consequence, Constantinople, instead of being, as in times past, one of the cheapest cities in the world to live in, is now more expensive than any other capital that I have lately visited; to be specific, living is here more costly than in London, Paris, Athens, Rome, Bucharest, Sofia, Damascus, or even Jerusalem and Cairo. In what degree the high cost of living in Constantinople is due to profiteering I do not know; but it is not necessary to attribute wholly to profiteering the excessive cost of living here at this time, in view of the demand for quarters to live in and the cutting off of the supplies from Asia Minor.

From the point of view of the future, the burned areas of Constantinople are an asset of incomparable value and interest. The great fires of the last century in American cities furnish no proper parallel. These cities were of modern growth, with broad and regular streets, and in most cases had an adequate system of sewers and water-mains. With the exception of a comparatively small area, therefore, it was possible in rebuilding to follow old street lines.

Here in Constantinople, on the contrary, one finds almost virgin soil for city planning. In the unburnt portions of the city a large part of the construction still remains of the most temporary character, and the development of public utilities is far behind the requirements of the population. On account of its commercial and political relations, and its advantages of location, at the crossing of two intercontinental trade routes—an east-and-west land route connecting Europe and Asia, and a great water route north and south—this center of population, under proper governmental administration, must rank among the most important in the world.

If only a far-sighted and liberal public policy can be worked out and given legal sanction, it presents the most extraordinary opportunity of the ages to build a metropolitan city in the light of the experience and knowledge which the centuries of civic development, and the recent decades of intensive study of city planning, place at the service of the expert.

Results of Government Housing in Canada

UNDER the provisions of the Canadian Housing Act, dated December 3, 1918, and recorded in The American City in April, 1919, the sum of $25,000,000 was allotted to housing loans to the provinces. In a report by the Department of Health of the Dominion, under whose jurisdiction the housing problem is handled, the unexpended amount available as of March 31, 1921, was $10,455,000. Eight of the provincial governments had at that time adopted the act providing for the acceptance of the loan for the erection of dwelling places. These were Prince Edward Island, New Brunswick, Quebec, Ontario, Manitoba, Saskatchewan, and British Columbia. Alberta had not then acted. The amount of the Federal loan actually borrowed by the provinces up to March 31, 1921, was $14,545,000, and the total number of houses erected 3,691. It was expected that 1,496 additional houses would be built during the remainder of 1921. The provinces advanced to the municipalities $12,547,435 out of the Federal loan, while the total sum allotted to the municipalities reached $19,916,503. The amount was far below the applications for loans, which amounted to $34,522,897. Official reports received from the provincial housing authorities indicated that 171 municipalities had taken action, as shown by the following table:

Province	No. of Mu'palities That Have Taken Action	No. of Houses Built	Amount of Advance Made
Ontario	72	2,344	$ 8,750,000
Manitoba	18	525	1,580,000
British Columbia	27	359	1,361,500
Quebec	34	263	1,033,500
Nova Scotia	6	93	600,000
New Brunswick	14	107	1,220,000
Total	171	3,691	$14,545,000

The Fire Hazard of Radio

A Problem Which Must Receive the Serious Consideration of Fire Officials, Particularly with the Present Thunder-Storm Season

WITH at least 750,000 radio sets now in active use throughout the United States, the majority of them in private homes, and with the ranks of the fans constantly increasing, all records for the popularizing of a new scientific discovery have been swiftly eclipsed. Like many other inventions, radio telephony has introduced a new fire hazard which must be recognized by fire officials.

No longer ago than last November only a few thousand receiving sets were in use. These were experimental affairs, playthings almost exclusively of the younger generation. Lacking authoritative instruction, amateurs installed these sets in many different ways, each one setting up his antennae according to his individual knowledge. Moreover, but slight regard was paid to the hazards incident to installation, especially the danger of fire arising from the attraction of lightning. Along with the astounding growth of interest in the subject, therefore, has come a need for regulation, with a view to removing such dangers as exist and to standardizing the installation so that the spread of radio for utilitarian, educational and entertainment purposes may continue with a maximum of efficiency and safety.

It is perhaps natural, considering the remarkably short time in which interest in the subject has grown, that potential fire hazards should be ignored or overlooked by the public and fire officials. Even where some realization of possible danger has existed, inquiries have been met for the most part with misinformation, unintentional, it may be, but none the less harmful. Among the legion of writers on topics related to the radio, a few have indeed consulted the current edition of the National Electrical Code, prepared by the National Fire Protection Association and approved and issued by the National Board of Fire Underwriters. But these requirements, promulgated in 1920, were based largely upon the hazards incident to the equipment of wireless telegraph transmitting stations where antennae of considerable height and length were used and where the hazard of high potential equipment had to be taken into account. In 1920 the wireless telephone had not yet begun to be really domesticated.

One of the fire hazards lies in the inclination of those interested to experiment with lighting circuits and other high voltage systems. It is reported that not long ago three children in Aiken, S. C., were burned to death in a fire resulting from a short circuit in a radio transformer. A New Jersey boy carelessly crossed the leads from his storage battery and started a fire that might have become serious if it had not been promptly detected. It is because of such dangers that the National Electrical Code requires all wiring to be in accordance with the class of installation. The work should always be inspected before being placed in service.

In order that the Electrical Code may be kept abreast of the latest development in electrical science in its more practical aspects, it is habitually revised at two-year intervals. The spreading popularity of the radiophone made it necessary to revise that part of the code which relates to receiving and sending apparatus, and to make public the amendment at once to meet the emergency that has arisen. These revisions, it should be said, are in themselves tentative and subject to possible further amendment before they are incorporated in the next published issue of the Code.

The specifications have been drawn up by a special committee of the National Fire Protection Association, whose findings are viewed as standards of engineering practice. Besides the underwriting organizations represented on this body, engineers acting for the American Radio Relay League, the American Telephone and Telegraph Company, the Radio Corporation of America, and the Independent Telephone Association participated.

What City Officials Should Do

Every municipal official interested in the fire hazards of his city should secure a copy of the suggested specifications from the National Board of Fire Underwriters, 76 William Street, New York City, and see to it that these specifications are lived up to throughout the city, either incorporating them as an ordinance or seeing that they are published locally for the information and instruction of their citizens.

It is true that the lightning hazard is eliminated when indoor antennae are used and that outdoor aerials may be rendered reasonably safe by establishing proper ground connections and installing an approved lightning arrester. But these take care of only one source of danger. Other fire hazards remain. Many people do not realize that the 6-volt storage battery, such as numbers of enthusiasts are using to light the filaments of their electron tubes, is capable of starting a serious fire. It has done so more than once. Recharging such a battery from the electric lighting current in the home adds also to the risk of fire, as have recent ill-considered attempts to receive messages via the house lighting circuit. The presence of radio apparatus with its necessary wiring, installed more often than not without expert advice, increases the potential hazard of crossed wires already existing from lighting installations.

Municipal ordinances should require that every amateur receiving station should be set up in accordance with the new regulations and inspected by the underwriting organization having local jurisdiction, as soon after installation as possible, and should be altered to meet the recommendations of the organization. Fire insurance policyholders are aware, of course, that according to the terms of their contracts, alterations in the status of the risk, such as increase in the hazard made without the consent of the insurer, automatically void the policy.

Man-made Malaria

Fighting a Menace to the Health of the Country

THE task of eradicating malaria has been made doubly hard by the continual creation of fresh mosquito-breeding spots by impounding water either intentionally or unintentionally, as in the course of highway or railway construction. Owing to this, a considerable portion of the malaria in the country may be termed "man-made." Assistant Surgeon-General Carter, U. S. Public Health Service, found that probably three-fourths of the malaria in a district in eastern Virginia came from such artificial pools and swamps.

Man-made malaria is of special importance at present because of the recently enacted Federal Highways Act, which provides many million dollars for building additional good roads in the South. The specifications require that the culverts on these roads shall be so placed that they will completely drain all wet areas above the culvert entrance and that all borrow-pits or excavations made along the roadways shall be filled or properly drained. Many Southern States have enacted laws of similar purpose.

It is of the utmost importance to the public health that these state laws and Federal regulations shall be faithfully observed while the roads are being built, for at that time adequate drainage can be had with very little, if any, additional cost; whereas, if through carelessness or wilfulness the culverts are placed too high or the borrow-pits are not properly drained, the expense for later rectifications may be very great.

The State Highway Engineer of Alabama recently strongly appealed to all state and county engineers and road officials to cooperate in carrying out these laws and regulations. Every community in the South should take particular interest in this subject, and all good citizens should promptly report the whereabouts of any such disease-breeding spots that are being created in their vicinity, and should insist on their eradication. Not to do so will inevitably mean more mosquitoes and more malaria about their homes.

No road, however necessary for travel, can be called good if it interferes with proper drainage.

CHARLES RECH, PLAYGROUND MARBLE CHAMPION OF JERSEY CITY, AND THE WINNERS OF OTHER PLAYGROUND CONTESTS, WHOM HE DEFEATED

Playground Marble Contests Help Build Character

By A. Harry Moore

Director of Parks and Public Buildings, Jersey City, N. J.

WHILE visiting one of the playgrounds in Jersey City recently, I chanced to overhear two little boys wrangling over a game of marbles. They had been playing for quite a while, and one had lost many of his prize marbles. The winner was the best shot, but the loser was doubling the stakes with the hope of getting back what he had lost.

It was then that I decided that marbles, as it was being played, was not an ideal game for any boy, and the thought ran through my mind—why not play for honors instead of marbles, and in this way take the sting of gambling out of the game?

I talked the plan over with the Supervisor of Playgrounds. We then called a meeting of the playground instructors and drew up a set of rules, and the contests were started in sixteen playgrounds in Jersey City. Five thousand boys entered. We had them enter just as they would an athletic contest, by signing an entry blank and turning it over to the instructor of the playground nearest their home. These entry blanks were then filed and the eliminations were started.

We did not look for much success at the start, but as the contests continued, the boys soon forgot their lust for the other fellows' marbles and were fighting hard to win the chance to play for the championship of Jersey City. Then came the finals, and sixteen lads lined up for the honors and a chance to be hailed as the marble-shooting champion of Jersey City.

The interest in the game became widespread. Fathers and mothers of the lads came to Pershing Field. Hundreds of boys from the sixteen playgrounds came flocking to the big field to cheer for their respective shooters.

Charles Rech, a fourteen-year-old boy, large for his age but nevertheless a regular playground lad, was the final winner. Several of the other lads gave him a great battle, but he finally put them out and was received by all as the first and only marble-shooting champion in the country to-day. He was presented with a gold medal by the local Rotary Club, and the fifteen playground champions received silver medals.

Champion Rech did not have long to wait before a worthy opponent issued a challenge. Marbles had attracted President Harding, senators, congressmen, and other men of national fame at the national capital. The playground children of Washington started a contest, in which Michael Tariano was the final winner. The Washington star came to Jersey City with his manager and a number of his Washington friends. Ten thousand people witnessed this contest. Pershing Field was decorated with flags and bunting. Movie men were there by the score. Governor Edwards of New Jersey was an interested spectator. After a forty-five-minute battle, Rech finally won, and again was hailed as the world's champion. He has played many games since and has yet to taste defeat. He recently issued a challenge to the boys of the world, via the wireless route, that was heard in lower California and also in Alaska.

In getting the boys to play for honors they are being taught true sportsmanship. They are getting their first lesson in the game of clean athletics; they are being taken from the gambling side of the game and made to realize that honor and glory amount to more than wrangling and fighting over a few marbles that a fellow may win. It is teaching the boy to fight fair.

The rules, as adopted in Jersey City, call for a small ring to be placed in the center of a plot of ground. In this ring are placed the stakes, one marble for each of the players. Every player must furnish his own stakes. When the marbles have been placed in the circle, the contestants then stand at a line marked off 25 feet distant, and toss their shooting marbles. The boy tossing nearest the circle, or "fat," as it is termed by the Jersey City boys, gets the first shot. He must knock a marble out of the fat before he is given the chance of taking a crack at one of his opponents. If he knocks a marble from the fat, and then hits the shooting marble of one of the players, that particular player is out of the game. Every shooter must first knock a marble from the fat before he is allowed to try for a hit at some other fellow's shooter. In this way, the game narrows down to two players, and they jockey about the fat until one or the other is knocked out of the game and the winner is declared the champion.

PART OF THE CROWD THAT CAME TO SEE THE CHAMPIONSHIP CONTEST IN JERSEY CITY

Street Paving Methods in Providence, Rhode Island

Old Stone and Concrete Bases Used on Heavy-Traffic Streets

By M. H. Bronsdon

City Engineer, Providence, R. I.

THERE are 130,692.2 square yards, or 39,200 linear feet, of street of average width of bituminous pavement, including sheet asphalt, Warrenite and bitulithic pavement, laid upon rolled stone or water-bound macadam base, in Providence, R. I. The pavement is in the very best of condition and gives every indication of being as satisfactory as any pavement which we have laid. The rolled stone type of base is being used on streets classified as "medium traffic," where a 10-ton steam roller can be operated during construction. Between the tracks of the street railway company, a concrete base is being laid, owing to the fact that it is impossible to satisfactorily use a roller at these locations.

FRANKLIN STREET FROM WESTMINSTER TO WASHINGTON, PROVIDENCE, R. I., SHOWING SHEET ASPHALT PAVEMENT ON ROLLED STONE BASE

The 22,584 yards of sheet asphalt laid during the season of 1921 was laid either upon a concrete base in locations inaccessible to the roller, or upon a pentrated base laid in two courses each 3 inches thick, the lower course being bound with crusher screenings, and the upper course penetrated with Texaco 96 asphalt. The rolled stone base is favored because streets laid six years ago with this type of base show scarcely any cracks in the surface, and the traffic has increased so that now there is a large percentage of loaded 5-ton trucks passing over it. Another advantage in the use of a rolled stone base is that the time required for the total construction of the pavement is less than with any other type of base, and it is believed that the rolled stone type is just as permanent and reliable as concrete, black base or penetrated base.

The following specifications are used in Providence for laying a rolled stone or macadam base:

General Description.—The base shall consist of two courses of mineral aggregate, each course composed of specified coarse aggregate and screenings, and each course shall have a compacted thickness of not less than 3 inches. The two courses when completed shall form a foundation having a compacted thickness of not less than 6 inches and shall then conform to a plane 3 inches below the finished grade as shown on the plans of the city engineer.

Excavation.—The roadway to be paved shall be excavated to a plane not less than 9 inches below finished grade, the excavation being made by the removal of existing pavement, subsoil, concrete base, or anything that might interfere with the construction of a satisfactory rolled stone base or foundation. All soft or spongy places in the subbase shall be dug out and the material removed to the dump.

Wherever it is found necessary to excavate to a plane deeper than 9 inches below finished grade, gravel or other suitable material may be placed in layers not to exceed 3 inches in thickness and rolled to the satisfaction of the city engineer and until the subbase is brought to approximately 9 inches below finished grade.

Materials.—The mineral aggregate shall be broken stone and stone dust from one of the quarries, as follows, after selection has been made and so stated by the contractor in his bid:

The New Haven Trap Rock Company
Connecticut Trap Rock Quarries Company
Plantations Construction Company
Providence Crushed Stone & Sand Company

The coarse aggregate shall be in pieces as nearly cubical as possible, and stone containing an excess of flat or elongated pieces, splinters, or slabs will be rejected.

The stone dust or screenings shall all pass a ¼-inch screen. The coarse aggregate shall all pass a 2½-inch ring and be retained on a 1½-inch ring. If accepted, 1¼-inch stone shall all pass a 1½-inch ring and be retained on a ¾-inch ring.

Construction.—The contractor, in addition to excavating and preparing the roadway, shall remove and dispose of all waste material at dumps which he shall find or provide. Granite block or other paving removed during excavating, that may be of future use to the city or other owners, shall be delivered and piled by the contractor at sites or locations which will be specified to the contractor before excavation is undertaken.

The coarse aggregate shall be spread upon the prepared subgrade in a uniform loose layer of correct depth from piles dumped by trucks on platforms or by means of approved spreading wagons.

In no case shall the material be dumped directly in place. Suitable precaution shall be taken to prevent rutting of the subgrade during delivery and spreading of the coarse aggregate.

The coarse aggregate shall not be spread upon a wet subgrade, nor shall more be spread at one time than an average day's work in advance of rolling and filling.

Compacting and Filling Coarse Aggregate.—After excavation and preparation of the roadway and subbase as called for above, the mineral aggregate of the first course shall be evenly spread in a layer of such depth or thickness that after compacting by rolling, the surface of the same shall be at a plane uniformly 6 inches below the finished grade of the pavement as called for on plans of the city engineer.

The coarse aggregate shall be rolled with a 3-wheel power-driven roller weighing not less than 10 tons, the rolling to continue until the coarse aggregate has been thoroughly compacted to a firm, even surface. Rolling shall start longitudinally at the sides and gradually proceed toward the center of the roadway, overlapping all successive trips by approximately one-half the width of a rear roller, and shall continue until the aggregate does not creep or wave under the weight of the roller.

After the first course has been rolled to the satisfaction of the city engineer, stone dust or screenings shall be spread with shovels from piles located along the sidewalk. The stone dust or screenings shall be placed in thin layers and worked into voids by the use of hand brooms and by rolling, without the use of water, until no more can be forced into the interstices or between the coarse aggregate. During rolling, additional screenings shall be spread in thin layers where bare spots appear and shall be broomed off all spots or places where an excess of stone dust or screenings has been applied.

Stone dust or screenings shall be used only in such quantities as required to fill the voids and leave no surplus on the surface, after rolling is completed.

Second Course.—After the first course has been prepared as above, the second course of coarse aggregate shall be spread evenly over the compacted first course, of such depth that, after compacting by rolling, the surface of the same shall be at a plane 3 inches below finished grade as called for by plans of the city engineer. Stone dust or screenings shall then be applied and spread with shovels from piles located along the sidewalk in thin layers and worked into the voids by the use of hand brooms and by rolling without the use of water until no more can be forced into the interstices or between the coarse aggregate.

During rolling, additional stone dust or screenings shall be spread in thin layers wherever bare spots appear and shall be broomed off all spots or places where an excess of stone dust or screenings has been applied, it being the intention of using only such an amount of stone dust or screenings as will be required to fill the voids and leave no surplus on the surface after rolling is completed.

After the second course has been prepared, as called for above, the surface shall then be sprinkled with water and rolling again continued, the sprinkling to be in such quantity only as will settle the stone dust or screenings into the interstices or voids in the coarse aggregate, but not in such quantity that water will find its way into the base course. If through neglect or otherwise, water finds its way through the coarse aggregate into the subgrade and the coarse aggregate moves or waves under the roller, the contractor shall excavate all such places, and after excavating is finished shall fill up the same in layers and roll as called for above where soft spots appear.

Condition Prior to Laying Surface Course.—If, at any time prior to laying the surface course of pavement, the subgrade material becomes churned up or mixed with the base course materials, such mixture shall be dug up and removed at all such places and the subgrade shall then be reshaped and compacted and the base relaid and filled with clean aggregate and properly compacted.

If any irregularities develop in the surface of the base at any time during construction, they shall be remedied by loosening the surface and removing or adding coarse aggregate as may be required, after which the entire area, including the surrounding surface, shall be rolled, with the addition of screenings and water, until it is compacted satisfactorily to a uniform surface; all of which is to be performed in accordance with the details mentioned above.

Immediately before the laying of the surface course, the base course shall be cleared or cleaned of all loose or caked dust or screenings, dirt or any material that might interfere with the construction of a satisfactory pavement, and the entire surface left so as to present a uniformly rough or granular appearance admitting of complete bond with the surface course.

Where the Road Money Came From

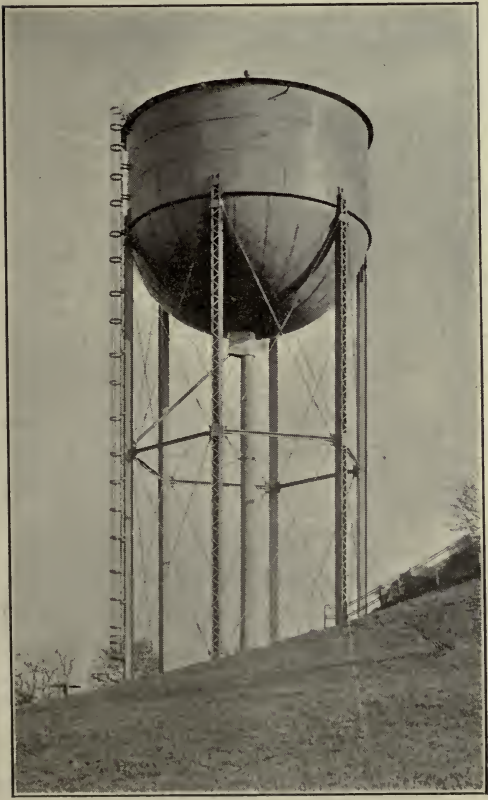
The United States spent $600,000,000 for roads in 1921, according to estimates of the Bureau of Public Roads, United States Department of Agriculture. This sum was derived from the following sources: local road bonds, 33 per cent; county, township, and district taxes assessments, and appropriations, 14 per cent; state taxes and appropriations, 12 per cent; state road bonds, 7 per cent; motor vehicle license revenues, 19 per cent; Federal Aid, 14 per cent; and miscellaneous sources, 1 per cent.

Water Storage in Johnstown, Pa.

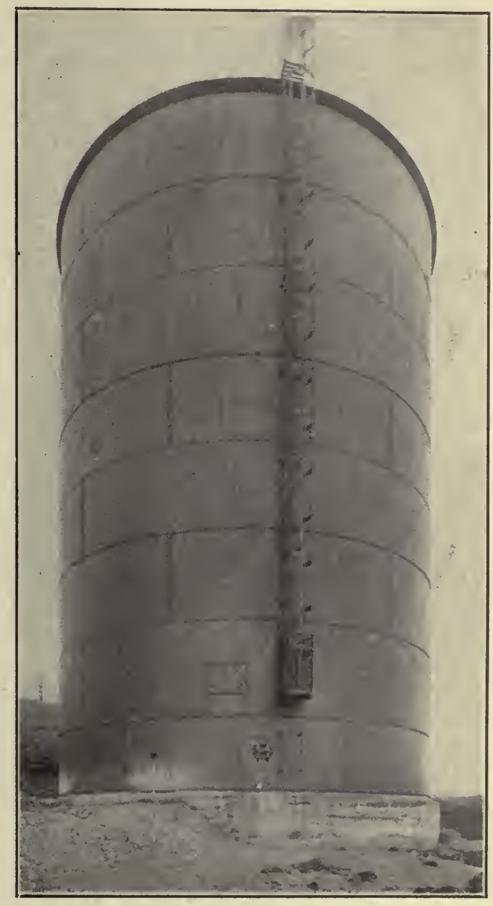
Elevated Tanks and Water-Tower Solve Problem of Supplying Water at Suitable Pressure to City and Hilly Suburbs

THE city of Johnstown, Pa., lies in a valley at an approximate elevation of 1,165 feet, but 25 per cent of the water consumers are located in suburbs on the hills at elevations varying from 1,400 to 1,750 feet. The Johnstown Water Company is at present carrying out a rather extensive program of steel tank construction to enable it to supply water at suitable pressures to all districts.

The main water-supply comes from five reservoirs located on various streams near the city. The water flows by gravity into the city proper, satisfactorily serving elevations up to and including 1,280 feet. From here it is boosted by auxiliary pumping stations to tanks or stand-pipes on the hills, from which it flows by gravity to the consumers located in that district. Each of these tanks serves as a complete and separate distribution system.



A 250,000-GALLON TANK



A STAND-PIPE OF 285,000 GALLONS CAPACITY

The elevated steel tank shown in the first illustration was erected last year for the Johnstown Water Company by the Pittsburgh-Des Moines Steel Company. This tank has a capacity of 250,000 gallons and is elevated 65 feet above the ground level. An unusual feature of the town is that the columns are of different lengths. The tank is located on a steep hillside, and in order to obviate as much excavation in solid rock as possible, the tower supports were built to fit the contour of the ground. This tank serves the suburbs of Westmont, Southmont, Elim and Brownstown.

The second illustration shows a steel water-tower, built last year by the same company. This is of the stand-pipe type, as the hillside on which it is built furnishes the necessary elevation. The tank has a capacity of 285,000 gallons and serves the Roxbury and Ferndale districts.

Plans for the remainder of this year call for the erection of three additional standpipes of large capacity to increase the supply for the Prospect, Moxham and Dale districts.

Because of the various elevations of the districts served, it is not economical to operate a central pumping station from which all districts can be supplied. This makes it necessary to operate seven different stations, the water-supply being taken from the gravity system at a head of approximately 100 feet and boosted with centrifugal pumps to the tanks on the high levels. The maximum capacity of the pumps is 600 gallons per minute each. The operation is so arranged that not more than three of these stations are running at the same time. All pumping is done between the hours of 6 P. M. and 6 A. M. when the peak load on the gravity system is lowest and when a decided decrease in the power rates is obtained, thus greatly lowering the operating costs.

The Soot Burden on American Cities

It Is Measured in Tons per Acre, Not Collars per Day

By Rudolf Kudlich

Assistant to the Chief Mechanical Engineer, U. S. Bureau of Mines

A SMOKE survey of Salt Lake City, conducted by the United States Bureau of Mines in 1920 in cooperation with the University of Utah of Salt Lake City, showed that the soot fall for that year averaged 349 tons per square mile per year, the average annual concentration being from 200 tons per square mile in the residential section to 798 tons in the business district near the railroad yards. A survey conducted the following year to determine the progress which had been made in smoke abatement showed that the concentration of soot had been decreased about one-third. A survey of smoke conditions in Grafton, W. Va., is also being made by the Bureau of Mines, but the results are not yet available.

The Mellon Institute of Pittsburgh in 1912 conducted a smoke survey of the city of Pittsburgh and the surrounding country, which showed that the annual soot fall varied from a minimum of 595 tons per square mile in the high residential district to a maximum of 1,950 tons per square mile in the low-lying mill districts along the Ohio River. The average fall over the entire district surveyed was 1,032 tons per square mile per year.

Another survey was made of the soot fall in St. Louis, which showed a minimum of 506 tons per square mile per annum in the high residential district and 1,247 tons per square mile along the river front, with an average of 812 tons.

A smoke survey was also made in Chicago in 1914, which revealed quite high smoke concentration, but no record of soot fall was made.

Note.—Published by permission of the Director of the U. S. Bureau of Mines.

Types of City Paving

In our cities the original water-bound macadam and gravel roads have for the most part given way to higher types of construction, until to-day they constitute an average of only about 26 per cent of the total yardage. The three most widely used city types are asphalt, brick and stone block. If we eliminate the water-bound pavements, we find that of the higher city types, asphalt constitutes about 55 per cent, brick about 19 per cent, and stone block about 14 per cent, giving a total of 88 per cent for these three types.

—Prevost Hubbard, *Chemical Engineer.*

A Temporary Substitute for a Swimming Pool

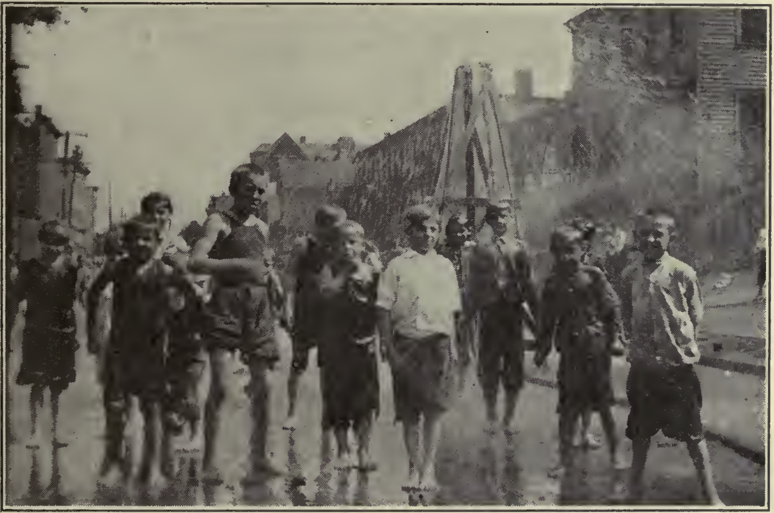
By Claude A. Allen

Superintendent of Recreation, Elizabeth, N. J.

By installing municipal shower-baths, Elizabeth, N. J., like New York City, has been successful in providing a new form of recreation for the children, many of whom live in cramped quarters where there are very poor facilities for bathing, and where trips to the beach are seldom possible. While it is not possible for children to learn to swim under the municipal shower, and it is acknowledged to be only a temporary substitute for a swimming pool, it affords great relief during the torrid days of summer for those that are unable to reach a swimming pool or the seashore.

Walter H. Baldwin, President of the Recreation Commission in Elizabeth, has had the idea of street showers in mind for a number of years, but only last year did it become a reality.

Before installing the showers, it was first necessary to lay the plan before the Mayor, who promptly gave it his hearty indorsement and encouragement. The next step was to get permission for the use of the street from the Board of Works. This readily accomplished, the Chief of the Fire Department was next visited and asked to supply fire hose and Bresnan distributors (which are used by the Fire Department in cellar fires, and are commonly called "cellar nozzles"). The final step was to plan something that would hold the hose and distributor in the air for a height of about 8 or 10 feet. The writer applied the idea of an oil derrick to this need and, with the cooperation of the Manual Training Department of the public schools, had a miniature derrick constructed 8 feet in height, which offered a suitable support for the distributor and allowed the water, under full pressure, to be sprayed for a radius of about 20 feet. Thus, four departments of the city cooperated in this service for the children—the Recreation Commission, the Fire Department, the Executive Department, and the Vocational School.



EFFECTIVE, INEXPENSIVE STREET SHOWER, ELIZABETH, N. J.

The first shower was erected at fire headquarters without formal announcement. Mayor Victor Mravlag, of Elizabeth, and President Baldwin of the Recreation

Commission, were on hand to see the shower in operation. In a few minutes after the installation, the street swarmed with children of various nationalities. Boys and girls from families in comfortable circumstances and others from homes where prosperity is a stranger were there, which shows that the new form is democratic. Many types of bathing outfits were in evidence during the season, and ranged in style from Fifth Avenue almost back to the Garden of Eden, the one-piece suit being the most fashionable for the boys and girls.

The municipal shower met with such pronounced success and was such a welcome innovation to this industrial city, where, in some sections, the children live in very cramped quarters, that the Recreation Commission plans for the installation of several during the present summer. Another step in advance will be attempted by providing a basin about 10 or 12 feet square under the shower in which the children can splash about.

There is really no reason why every town and city in the country cannot provide this form of recreation, not only for the children, but for adults as well, the expense being practically nil compared with the benefits and advantages gained. In Elizabeth, our showers cost the meager sum of $4.28 each, this representing the mere price of the lumber. In some sections this material could be secured gratis, making this new service possible by spending nothing more than time and thereby affording happiness, cleanliness, and relief that cannot be measured in dollars and cents.

The apparatus used in New York City was more expensive, more elaborate, and of a more permanent design, but neither was in need of any special facilities for being placed in operation. A fire hydrant and the bare street, combined with the shower, obtained for the children the desired relief. Many requests were received from adults to have the bathing continued in the evening, so that grimy, perspiring workers might be refreshed after a day's labor in a sweltering temperature of 90 degrees or over.

This practice helps not only to foster the communal idea, but to teach the health value as well as the comfort of bathing, to many whose ablutions are far too infrequent.

ELIZABETH'S SUBSTITUTE FOR THE "OLD SWIMMIN' HOLE" DRAWS THE SAME KIND OF KIDS

Acknowledgment.—From the *Journal* of the American Association for Promoting Hygiene and Public Baths.

> Health education seeks to insure to each individual his maximum contribution to the world.—*Dr. J. Mace Andress.*

What Is a Fair Salary for a City Engineer?

FOLLOWING the publication of the data on the salaries of fire chiefs and city clerks, THE AMERICAN CITY sent a questionnaire to city engineers throughout the country. Two hundred and sixty-one responded, as shown in the accompanying list.

In many of the municipalities the city engineer serves also as commissioner of public works or as superintendent of the water or light department, or both. In some places the city manager himself serves as the city engineer. In such cases we are in danger of comparing a city manager's salary with that of a city engineer. To obviate this difficulty, the mark X has been placed after the salary of each city engineer in the list who serves in some other capacity also and whose total salary is entered, as in many cases no division of salary was indicated.

It is interesting to note that out of the 261 cases reported, the salary of $250 per month is reported most often, on 27 occasions. Next in numerical order is the figure $200 per month, with 18 replies; $150, $300 and $416.66 per month, with 12 replies each, and $333.33 per month, with 11 replies. The salaries vary so widely that an average does not mean a great deal. At the one extreme lies Salem, Ohio, where the city engineer receives $80 per month, a salary which has not been increased in 25 years, and at the other extreme lies a city of 500,000 population where the city engineer is paid $15,000 per year. When grouped, the following facts are revealed:

City engineers paid by percentage of contract	14
City engineers paid by fees and miscellaneous methods	8
City engineers paid on a per diem basis	37
City engineers paid fixed salaries of $1,200 and under	11
City engineers paid fixed salaries of $1,201 to $1,800	21
City engineers paid fixed salaries of $1,801 to $2,400	32
City Engineers paid fixed salaries of $2,401 to $3,000	50
City engineers paid fixed salaries of $3,001 to $3,600	23
City engineers paid fixed salaries of $3,601 to $4,800	21
City engineers paid fixed salaries of $4,801 to $6,000	21
City engineers paid fixed salaries of $6,001 to $9,000	8
City engineers paid fixed salaries of $9,001 to $15,000	2

Among the larger cities reporting, San Francisco leads with $1,250 per month; Waterbury, Conn., is second, with $1,000. Then follow: Boston, with $750; St. Louis, with $666.66; Indianapolis, Baltimore, Richmond, Va., and Seattle, each with $625; Newark, N. J., and Buffalo, with $583.33; Hartford, Conn., Jersey City, Syracuse, Yonkers, Cincinnati and Pittsburgh, with $500; Cleveland, with $483.33; Kansas City, Mo., and Providence, R. I., with $458.33; Los Angeles, New Orleans, Worcester, Mass., St. Paul, Albany, N. Y., Lakewood, Ohio, Portland, Ore., Memphis, Tenn., Milwaukee, and Alma, Mich., with $416.66; St. Joseph, Mo., with $400; Akron, Ohio, and Washington, N. C., with $375; and Fall River, Mass., with $362.50.

A great many of the engineers in the smaller cities are paid on the per diem basis for such time as may be required. Some receive a fixed percentage of all improvements; some receive a percentage which varies according to the kind of improvement done; others are paid at a flat rate per linear foot. The percentages vary from 2 to 7, the prevailing figure being 5 per cent. On the per diem basis, the prevailing figure seems to be $10, although 7 cities report as low as $5, and 6 as high as $15. Massachusetts cities seem to be fairly consistent, Boston, the largest, paying $750 per month and providing an automobile, although Haverhill, the seventh in size, pays the lowest salary recorded for that state. The province of Ontario likewise has a fairly even scale, ranging from $225 per month up to $333, according to the size of the community.

Some of the city engineers are allowed additional sums for transportation, as in the case of Baltimore, Md., and Hartford, Conn., which last year provided an allowance of $2,000 and $600, respectively. In Brainerd, Minn., out of a salary of $2,500 per year, the city engineer is expected to furnish and pay the expenses of a Ford car. At New Prague, Minn., the city engineer reports $150 per month for a 10-hour day. At Carmen, Mo., the city engineer is paid on the basis of 50 cents per hour for the time required. These latter figures speak for themselves and need no comment.

Unless otherwise indicated, the salary figures are on a monthly basis. Salary paid only for time actually required is shown thus: per month—m; per day—d. When city engineer serves in other capacities also, total salary is given and marked x.

City and State	Population	Over 10,000	Under 10,000
ALABAMA			
Birmingham	178,270	$416.66	
Selma	15,607	150	
ARKANSAS			
Little Rock	65,030	215	
CALIFORNIA			
Chico	8,872		$100
Fullerton	....		10 d
Merced	3,974		20c per linear ft. paving
Modesto	9,241		200
Los Angeles	576,673	416.66	
Oakdale	....		15 d
Oakland	216,361	375 and auto	
Ontario	7,280		250x 25 m expense of auto
Oroville	3,340		5 per yr. 10 d
Palo Alto	5,900		275
Redlands	9,571		350
San Diego	74,683	300x	
San Francisco	508,410	1,250	
Santa Barbara	19,441	225	
Vallejo	16,853	300	
COLORADO			
Buena Vista	....		fees only
Colorado Springs	29,572	350	
Leadville	4,959		10 d
Pueblo	42,908	206.66	
CONNECTICUT			
Hartford	138,036	500 50 transportation	
Naugatuck	15,051	166.66	
New Haven	162,519	333.33	
Waterbury	91,410	1,000	
DELAWARE			
Wilmington	110,168	300	
FLORIDA			
Arcadia	3,479		250
Sanford	5,588		12 d
IDAHO			
Boise	21,393	168.50	
Pavetta	....		Per diem or 5% on contracts
ILLINOIS			
Canton	10,928	10 d	
East Moline	8,675		250x
Galva	2,974		2%
Kewanee	16,026	250	
Metropolis	5,055		per diem
Normal	5,143		5% on all improvements
Rockford	65,651	208.33	
INDIANA			
Bloomington	11,595	83.33	
Covington	....		Piece work one charge for each job
Crawfordsville	10,139	125	
Crown Point	3,232		8 d
Elkhart	24,277	150 and fees	
Gary	56,378	333.33	
Huntington	14,000	125	
Indianapolis	314,194	625	
Jasper	2,539		4% of contract price
Lafayette	22,486	150	
Linton	5,845		5 m and 5 d
Peru	12,561	125	
Shelbyville	9,701		83.33
South Bend	70,983	250	
IOWA			
Atlantic	5,329		5% on improvements
Cresco	3,195		10 d
Glenwood	3,862		10 d and expenses
Indianola	3,628		8 d 5 winter months 10 d 7 months
Keokuk	14,423	165	
Muscatine	16,068	150 and 350 per yr. for transportation	
Rock Rapids	2,172		3 to 5% of cost of job
Sheldon	3,488		7% on sewers, 4% paving, other work 10 d and expenses
KANSAS			
Emporia	11,273	200x	
Fredonia	3,954		125
Iola	8,513		100
Kansas City	101,177	250	
McPherson	4,595		5 d
Minneapolis			3% on contract price
Neodesha	3,943		200
Parsons	16,028	175	
KENTUCKY			
Louisville	234,891	333.33	
Pikeville	2,110		30 year 10 d
LOUISIANA			
New Orleans	387,408	416.66	
MAINE			
Fort Kent	4,237		300
Lewiston	31,707	41.66 and office rent	
Old Town	6,630		12 d
Rockland	8,109		6 d
MARYLAND			
Baltimore	733,926	625 and 166.66 for expenses	
Easton	3,442		15 d
MASSACHUSETTS			
Boston	748,060	750 and auto	
Brockton	66,138	250	
Fall River	120,485	362.50	
Fitchburg	41,013	291.66x	
Haverhill	53,884	191.66	
Lawrence	94,270	229.16	
Lowell	112,759	350	
Melrose	18,204	229.16x	
New Bedford	121,217	316.66	
Newton	46,054	312.50	
Winchester	10,391	216.66	
Worcester	179,754	416.66	
MICHIGAN			
Alma	7,542		416.66x
Battle Creek	36,164	200	
Grand Rapids	137,634	275	
Hastings	5,132		204.16
Jackson	48,374	300	
Kalamazoo	48,858	333.33	
Negaunee	7,419		200
Niles	7,311		200
Pontiac	34,273	333.33	
Royal Oak	....		500x
Ypsilanti	7,413		260
MINNESOTA			
Albert Lea	8,056		200 and fees
Bemidji	7,086		250x
Brainerd	9,591		208.33 furnish car and upkeep
Duluth	98,917	291.66	
Eveleth	7,205		225
Faribault	11,089	250x	
New Prague	....		150
New Ulm	6,745		195
Pipestone	3,325		230
Rochester	13,722	350	
St. Paul	234,595	416.66	
Willmar	3,892		15 d and expenses
MISSOURI			
Boonville	4,665		5 d
Cameron	3,248		50c per hour
Excelsior Springs	4,167		5 d
Fulton	5,595		150x
Jefferson	14,490	250 furnish car & upkeep	
Kansas City	324,410	458.33	
St. Joseph	77,939	400x	
St. Louis	772,897	666.66 (Director of Streets and Sewers)	
MONTANA			
Bozeman	6,183		175
Havre	5,429		250
NEBRASKA			
David City	2,216		4.50 d
Lincoln	54,948	333.33	
Norfolk	8,634		225
Red Cloud	....		8 d
Sidney	2,582		25
University Place	4,112		4 d
Wayne	2,115		8 d
Wilber	....		175

City and State	Population	Over 10,000	Under 10,000
Nevada			
Reno	12,016	250	
New Hampshire			
Concord	22,167	200	
Keene	11,210	200	
Nashua	28,379	150	
New Jersey			
Jersey City	....	500	
Newark	....	583.33	
Newton	4,125		12 d
Paterson	135,866	291.66	
Ridgewood	7,540		225
Trenton	....	275	
Wallington	5,715		Piece work
New York			
Albany	....	416.66	and transportation
Auburn	36,192	291.66	
Binghamton	66,800	333.33	
Buffalo	....	583.33	
Carthage	4,320		10 d
Elmira	45,305	250	
Geneva	14,648	275	
Hudson	11,745	150	
Johnstown	10,908	150	
Oneonta	11,582	208.33	
Port Jervis	10,171	Piece work	
Syracuse	....	500	
Troy	72,013	333.33	
Wellsville	5,046		Fees
Yonkers	....	500	and 200 for transportation
North Carolina			
Asheville	28,504	250	
Durham	21,719	300	
Mount Airy	4,753		200
Washington	6,314		375
North Dakota			
Carrington	....		1 per hour
Langdon	1,228		50 and commission
Ohio			
Akron	....	375	and 50 for auto expense
Chardon	....		1 per hour and expenses
Cheviot	....		6% of total estimate
Chillicothe	15,831	125	
Cincinnati	....	500	
Cleveland	....	483.33	
Dayton	....	250	
Delaware	8,756		187.50x
East Liverpool	21,411	208.33	
Elyria	20 474	250	
Lakewood	41,732	416.66	
Lancaster	14,706	166.66	
Mansfield	27,824	200	
Marion	28,591	200	
Newark	26,718	160	
Oberlin	4,236		208.33
Salem	10,305	80 same for 25 years past	
Sandusky	22,897	200	
Wooster	8,204		150
Youngstown	....	320	
Oklahoma			
Altus	4,498		30 and fees
Chickasha	10,179	100	
Frederick	3,822		50 and 5% for all work over 500
Okmulgee	17,430	300	
Ponca City	7,051		Piece work
Oregon			
Eugene	10,593	200	
Pendleton	7,387		Piece work
Portland	258,288	416.66	
Pennsylvania			
Ambridge	12,730	250	
Chambersburg	13,171	150	
Clairton	6,264		250
Doylestown	3,837		10 d and expenses
Duquesne	19,011	291.66	
Hanover	8,664		125
Lock Haven	8,557		125
Oil City	21,274	225x	
Parnassus	3,816		8 d office work, 10 d field work
Pittsburgh	....	500	
Perkasie	3,150		1 per hour
Rankin	7,301		210
Reading	....	300	
Tyrone	9,084		Fee and per diem
Uniontown	15,609	200	
Wilkinsburg	24,403	210	
Rhode Island			
Providence	....	458.33	
South Carolina			
Orangeburg	7,290		333.33 furnish car and upkeep
Spartanburg	22,638	200	
South Dakota			
Brookings	3,924		10 d
Watertown	9,400		225
Tennessee			
Bristol	8,047		10 d
Cleveland	6,522		4% of all cost
Dayton	....		100 m
Harriman	4,019		5 d
Memphis	162,351	416.66	
Nashville	....	250	
Texas			
Beaumont	40,422	300	
Canadian	2,187		5%
Fort Worth	....	250	and transportation
Galveston	44,255	200 and expenses	
Houston	....	416.66	and expenses
Mercedes	3,414		10% on $1,000 of work, 7½% on all over per month
San Antonio	....	350	
Stamford	3,704		250
Victoria	5,957		250
Utah			
Lehi	3,078		15 d
Provo	10,303	175	
Salt Lake City	....	350	
Virginia			
Newport News	35,596	300	
Richmond	....	625	
Washington			
Chehalis	4,558		190x
Seattle	....	625	
Spokane	....	300	and transportation
Washington, D. C.	....	250	
West Virginia			
Charleston	39,608	283.33	
Parkersburg	20,039	150	
Wisconsin			
Beloit	21,284	250	
Chilton	....		6% on contracts
Chippewa Falls	9,130		166.66
Delavan	3,016		175
Eau Claire	20,614	225 plus 60% of outside work	
Green Bay	31,017	250	
Janesville	18,293	300x	
Lake Geneva	2,632		7 d
Manitowoc	17,563	225	
Mayville	3,011		5 to 7% on contracts
Milwaukee	....	416.66	and 30 for expenses
Sparta	4,466		100
Wyoming			
Rawlins	3,969		15 d averaging 5 days month
Sheridan	9,175		125
CANADA			
Alberta			
Edmonton	58,627	325	
New Brunswick			
Fredericton	8,081		250
Ontario			
Brantford	29,395	333.33	
Owen Sound	12,174	233.33	
Peterborough	20,989	291.66	
St. Thomas	15,924	225x	
Stratford	16,064	250	
Windsor	38,541	333.33	
P. E. Island			
Charlottetown	12,329	125	
Quebec			
Valleyfield	9,180		15 d
Saskatchewan			
Regina	34,432	275	

Promoting the Community Health

By Philip P. Jacobs, Ph. D.

Publicity Director, National Tuberculosis Association

IN 1905, when the National Tuberculosis Association first began its work, there were less than a dozen tuberculosis associations in this country, and most of these dozen were paper organizations. At the present time, besides the National Tuberculosis Association, there is a strong state association in every state and even in the outlying possessions of Porto Rico, Hawaii and the Philippine Islands; there is a strong local association in every large center of population, and there are other local associations in the less populous districts. These organizations number some 1,200 all told, and about one-half of them have either full-time or half-time executives.

The control of tuberculosis is distinctly a task for the city, the town and the county. State and even Federal aid may be necessary, but the ultimate control of the disease must be vested with the local authorities. The intimate connection between the tuberculosis campaign and any form of business men's organization is evident, particularly when one realizes that tuberculosis is the most serious health hazard that American industry has to face and is costing business more money than any other single disease.

The functions of a local tuberculosis association include:

1. *Demonstration.*—Bringing to the notice of communities all important new developments and turning over these developments to the community itself when the private agency has shown their worth.
2. *Education.*—Arousing community interest in the public health, or, as it has been so well put on other occasions, selling health to the individual and the community.
3. *Organization.*—Bringing together all of the agencies in the community in a combined movement against tuberculosis and for public health.
4. *Legislation.*—Securing necessary laws and ordinances for the control of the disease and the establishment of the proper official machinery to enforce the laws.
5. *Stimulation.*—The general supervision and standardization of all the activities, both official and non-official, with a view to seeing that every dollar spent for the public health produces one hundred cents' worth of value to those who contributed it, whether as taxpayers or in some other capacity.

The Provision of Institutional Facilities

Fifteen years ago there were less than 150 tuberculosis hospitals in the United States, with a total capacity of hardly 10,000 beds. To-day there are 600 such institutions with a total capacity of 60,000 beds. Fifteen years ago one could count the number of tuberculosis dispensaries on the fingers of one hand. There were no tuberculosis or public health nurses. There were no open-air schools. There were no preventoriums and, in fact, most of the community machinery for the control of tuberculosis that we now recognize as necessary was lacking. To-day there are 600 tuberculosis clinics and dispensaries scattered throughout the country, to say nothing of scores of traveling clinics that are bringing the doctor to the people instead of waiting for the people to go to the doctor. There are 10,000 public health nurses, of whom a very considerable number are doing tuberculosis work in whole or in part. There are several thousand open-air schools and fresh-air classes. There are scores of preventoriums for children.

The death rate from tuberculosis, which is the surest index of progress against the disease, is declining. When the National Tuberculosis Association was organized, in June, 1904, the death rate for tuberculosis for the registration area of the United States was 200.4 per 100,000 population. In 1919, the last available figures for the registration area, the rate was 125 per 100,000 and there is abundant evidence to show that for 1920 the death rate was down at least to 120. For 1921, figures from every available source indicate that the rate is still going down.

In spite of this encouragement, there is yet a big task before us. There are approximately 1,000,000 active cases of tuberculosis in this country, according to best available estimates. The chambers of commerce and business men's organizations can unite on no movement that will produce bigger results for themselves and for the community than this movement for the prevention of tuberculosis.

What the City Manager Plan Has Meant to Norfolk, Virginia

By William H. Jenkins

Information Secretary, Norfolk Chamber of Commerce—Board of Trade

AFTER a struggle extending over 182 years, in which the bi-cameral form of government managed to exhibit all of its undesirable features and practically no advantages, Norfolk, Va., inaugurated the city manager form of government September 1, 1918, with Charles E. Ashburner, former city manager of Springfield, Ohio, as city manager.

To say that the new form has made good is but to summarize the expressed view not only of the original supporters of the plan, but of practically all its former enemies.

"It has made good because it has proved the contentions of its investigators, that it would be a business form of government," you will be told by almost any voter you may approach on the subject.

"It has made good because it has given the city a credit whereby it has been enabled to sell its securities readily at the top figure for such paper," Norfolk will tell you.

And it has made good because it has given the people something for their money—because they have been able to see, by concrete improvements, that their money has been spent without regard to political preference or petty legislative manipulations. More than nine million dollars has been spent for public improvements in Norfolk since the new form was inaugurated.

Ward Lines Eliminated

The effect of the new charter is to eliminate the ward lines which governed the selection of councilmen under the old form of government. Five councilmen now are elected from the city at large, and are thus able to think in terms of the community rather than of some circumscribed ward. All administrative department heads are responsible to the city manager, who reports in turn to the council.

One accomplishment of the new government has been the complete separation of juvenile and domestic offenders from the police court and police station. The Juvenile and Domestic Relations Court is a separate institution, with its own judge, its own clerk, and other court officers. It has its own court building and a well-equipped detention home, far removed from the police station environment. All the city's legal affairs are handled by the Legal Department, in charge of the City Attorney and a full-time staff.

The Department of Public Works, in charge of a director who is an engineer of many years' experience, embraces the water department, highways and bridges, water construction and sewers, and public surveys. Under this department in the last three years forty-three streets have been paved, sewers laid on forty streets, and twenty-five miles of water-mains constructed. The 1922 program for street and sewer improvement provides for an expenditure of about one million dollars.

New $5,000,000 Water-Plant

In addition to these improvements, the

PANORAMA OF PIERS AND MUNICIPAL TERMINALS OPERATED BY THE NORFOLK PORT COMMISSION city is now completing a five-million-dollar water-plant, which will give a supply ample to meet the city's needs for the next fifty years, and will permit of tapping an inexhaustible supply of water with a small additional cost. Under the old form of government, the city council investigated water-supplies and discussed the need of additional water facilities for fifty years. The new government decided what it was going to do and provided the means with which to do it in a few months.

The Department of Public Welfare, in charge of a director, includes a Board of Health with six physicians and nine trained inspectors. There is also a bacteriological laboratory where work is done for the city and surrounding territory. Inspection of dairies and meats comes under this department. Then there is a city hospital, built by the municipality and operated free for those unable to pay, as well as a city dispensary where prescriptions are filled for those who are not financially able to purchase drugs. Through the medical inspection of schools, a card index is kept of every child during his entire school life, with the idea of correcting defects.

Included in the Department of Public Welfare are the bureaus of markets, parks, city home, cemeteries, and standards (weights and measures). Twenty-three playgrounds fully equipped and in charge of paid supervisors are in operation.

A city planning commission has been created by the City Council, which has done conspicuous work in widening streets and developing new thoroughfares, and in paving the way for the annexation of about fifteen square miles of territory, which is now pending.

Port Development Undertaken

One of the most notable accomplishments of the new government has been its success with its port development plan. After considerable study of conditions at other ports, the City Council created the Norfolk Port Commission, composed of business men who serve without pay and are chosen with particular attention to their qualifications for handling the various phases of port development. This Commission is now successfully operating a large portion of the Army Base terminal facilities here as a municipal terminal under a lease arrangement with the War Department. The Commission has secured desirable pier and switching charge arrangements with the belt line and trunk line railroads, and is demonstrating the success of the municipally owned terminal idea.

The Port Commission is now building a huge grain elevator on a site fronting half a mile on Hampton Roads, owned by the city, the scheme including piers, warehouses and oil storage tanks. The management of all municipal terminal facilities is in charge of the Director of the Port, who reports to the Port Commission.

The Department of Public Safety, under a director, consists of the divisions of police and fire, electrical affairs, building and plumbing inspection, and the care of public buildings. Conspicuous among the accomplishments of this department has been the complete reorganization of the Police Department, placing it on a basis of highest efficiency rather than politics. From a department of 212 men lacking in training, discipline and morale, receiving $4.15 per day for the days they worked, the personnel has been raised to a force of 276 men, well trained, of high character, and working in harmony of promotion. The minimum pay scale is now $1,890 per year, straight time, with a working day of eight hours.

The personnel of the Fire Department has also been materially strengthened, a two-platoon system put into effect, considerable equipment added, and a thorough system of fire inspection installed.

Revenue System Overhauled and Savings Effected

Under the close supervision of the City Manager as acting Director of Finance, the revenue has been greatly increased through the offices of the Commissioner of the Revenue and the License Inspection Bureau, without an increase in the license rate. For instance, on the same item on which $280,706 was collected in 1917, nearly two million dollars is being collected to-day, by the elimination of favoritism and the education of the public in taxation matters. The offices of Auditor, City Treasurer and License Inspector are also part of this department.

Norfolk is willing to admit that its form of government may have flaws in it. But Norfolk will also tell you that no flaws of perceptible size have been found as yet.

And when they are found, if they are there, the process of rectification is simple in the extreme.

How Norfolk Feels About It

Some idea of how Norfolk people feel toward city manager government can be had from the following statements by prominent business men:

Barton Myers, chairman of the Norfolk Port Commission, says:

"The city manager form of government here has completely transformed conditions under which we previously operated. The old organization of a two-chamber legislature, with representatives in the councils from ten wards, resulted in the usual log-rolling, through which unnecessary expenditures were frequently made to secure votes from wards, where expenditures were not of equal importance with many matters left undone. The constantly changing personnel of an unpaid council brought in men of inexperience, sometimes only actuated by personal ambition or interest. We now have a legislative paid council of five business men with a very active and efficient city manager. The development of the city is treated as a whole, all propositions are considered and legislation promptly adopted. The result has been the adoption of a harmonious plan of physical improvement, a reorganization of the police, health and other departments. And while this simplified form of government has now been in operation about three years, its superior efficiency is so generally recognized that under no circumstances would we return to the former system."

Asked what he considered the greatest gain to the city from city management, City Manager Charles E. Ashburner said:

"The greatest things accomplished by the city manager form of government are the absolute elimination of politics from the city administration and substituting merit for political pull. The elimination of ward lines, thereby causing the people to think of the community as a whole, creates the heretofore unknown spirit of cooperation. A city gets only the kind of government the people deserve, and all credit for the things that are accomplished is due to the people, who by their support make it possible for public officials to render the service for which they are paid."

H. H. Rumble, of the firm of Rumble & Rumble, attorneys at law, says:

"What the new form of government has meant to Norfolk may be summarized in the statement that it has meant a thorough-going business administration of the affairs of the city. We have a well-organized and very efficient police force, cleaner streets, increased speed and efficiency in handling public business, and an extensive program of street and other public improvements now under way. I know of no thoughtful citizen who would be willing to return to the old order of things."

Henry G. Barbee, President of the Chamber of Commerce, says:

"City management here is a business management consisting of five business men with a general manager; which means in turn that the business of the city is handled around a table, as the directors and general manager of any business handle their business. City manager government has proven in the mind of every good business man that it is a great success. I do not believe that I am putting it too strongly when I state that we are getting 33⅓ per cent more results from actual money spent than ever before."

W. G. Swartz, of Miller, Rhoads & Swartz, says:

"Wonders have been worked in the systematic routine of affairs in the short time the city manager form of government has been inaugurated. Politics have been entirely eliminated from city affairs. Red tape has been abolished, as power and authority have been concentrated under one head. Perfect harmony rules, as the Manager and Council are working together as one."

Second Western Summer School of Community Leadership

Palo Alto, California, September 18-23

Arrangements have just been completed for the holding of the second Western Summer School of Community Leadership at Palo Alto, Calif., September 18-23. This year, Leland Stanford University, the League of California Municipalities, and the California Association of Commercial Secretaries have combined with the American City Bureau in the organization of the school. This is the first time that a state league of municipalities has adjusted the time and place of its annual convention to meet jointly for conference and study with chamber of commerce executives. The success of last year's school gives promise of a most interesting session this year. Information can be obtained from the San Francisco office of the American City Bureau, Merchants Exchange Building.

Garbage and Refuse Collection Motorized in Los Angeles

City Engineering Department Invests in Trucks as Conservation Measure

THE Engineering Department, Los Angeles, Calif., has estimated that a saving of approximately $25,000 per year over the cost of collection by the old private contract has been effected by the installation of 15 motor trucks of 2½ tons capacity for removing rubbish and garbage throughout the city. Previous to the installation of motor equipment by the city, this work involved an expenditure of $70,000 per year.

The bodies of the Model 70-H Garford truck, 8 of which are shown in the accompanying illustration, have a capacity of 10 cubic yards. They are arranged with hinged sides, which facilitate easy collection of the load. When the sides are dropped, approximately two-thirds of the load can be attained. The sides may be conveniently raised, after which the maximum capacity can be loaded. Steps are provided on each side of the body for the lifting and dumping of rubbish cans over the highest point with the least possible effort.. Quick discharge of the load is effected by releasing the tail-gate hinged at the bottom and rear of the body.

Certain sections of the city are assigned to each truck where it collects rubbish and garbage at stated times. Boxes containing tin cans and non-combustible rubbish are set near the cans by property owners. The trucks are manned by a driver and by two helpers who pick up boxes from the curb and dump the rubbish into the truck as it passes along. In sections of the city where alleys run along the rear of the houses, it is compulsory for the property owners or occupants to place the boxes on shelves, which makes it unnecessary for the helpers to step down from the truck, thus saving considerable time in loading. When the trucks are fully loaded, they are driven to a privately owned central station, backed up to the dump and unloaded. Through an incline at the dump, tin cans and rubbish slide to an endless belt about 40 feet in length, where broken glass and bottles are segregated, after which the tin and other metal is elevated to a bin and pressed into a solid mass about 3 feet square. These squares are later melted and made into window weights.

The garbage trucks operate in much the same manner as the rubbish collectors. Open sheet iron bodies are provided. When fully loaded, the trucks are driven to flat cars with steel sides. The truck bodies, with the loads, are elevated from the chassis by means of a crane and dumped onto the flat cars. This operation consumes not more than five minutes. The loaded cars are then made up into "The Garbage Special" and taken to a ranch a few miles outside of the city.

This system of rubbish and garbage removal and disposal has considerably improved sanitary conditions in Los Angeles.

THE LOS ANGELES GARBAGE COLLECTION FLEET

Phillips University Library
Enid, Oklahoma

Shall the States Lose Control of the Public Utilities?

By Sedley H. Phinney

Executive Secretary, New Jersey League of Municipalities

WITHIN the last few months there has been a development in public utility regulation that threatens to end state control of this field and make it a function of the Federal courts. It is one more example of the growing tendency toward government by injunction that many deplore as threatening the orderly processes of legislative procedure. A large number of city and state administrations have been aroused to the danger and are at close grips in Washington with financial and utility interests.

This struggle centers around the Bacharach Bill in the House of Representatives, H. H. 10212, the cities being for, and the utilities against, its passage. This bill was introduced at the request of the New Jersey Public Utility Board to correct a situation that had arisen in New Jersey. It would limit the jurisdiction now assumed by United States district and circuit judges and their power to set aside and nullify a judicial determination of a state public utility commission in any case where a right of appeal or review is given by the laws of the state.

The case out of which it grew involved the determination of street railway rates in a territory including two-thirds of the population of the state. It was pending for two years, and nearly 14,000 pages of testimony were taken. The Board, by a unanimous decision, fixed a rate. The state statute under which the Board is created gave to the utility the right of review by the Supreme Court and of appeal to the court of last resort, the Court of Errors and Appeals of the state. Of course, it also had the right of appeal from the latter court to the United States Supreme Court on constitutional questions. The utility in question ignored the courts of the state and made an ex parte application upon affidavits to a United States District Judge for an injunction restraining the Board from carrying out its order, although the order of the Board made no reduction in rates. On this ex parte application an injunction was granted. It was subsequently vacated, but again granted on a hearing on affidavits, after the District Judge had called in two other judges, as provided by Section 266 of the Federal Judicial Code, one of the other judges voting with the District Judge. The record in the case, upon which the Board made its decision, was not admitted in evidence. Thus the expenditure of $75,000 by the cities of the state in this case is made worthless, as the case must be started de novo before a Federal master. On this hearing of a summary character the utility corporation was authorized by the Court to fix a rate in excess of that allowed by the Utility Commission.

This was the first large-scale example of this procedure. It was recognized that the same thing might be done in other states if this became a precedent. If utility corporations engaged in purely intrastate business are permitted to override the State Utility Commission's judicial determination, to repudiate the orderly and adequate state procedure for review by the state courts of the State Commission's orders, and to obtain from a Federal district judge not only an injunction against the fixing of a rate by a utility commission, but an order authorizing a rate which the Federal judge thinks permissible, it will be but a question of time when not alone in the state of New Jersey, but in every state, the same practice will be followed by utility corporations. Thus, regulation by the state of its own utility corporations will have passed out of the hands of the state and into the hands of the Federal District Court. Utility corporations will then have accomplished, in this way, what they have long sought, namely, the destruction of state regulation.

A nation-wide campaign was begun for support for the bill. Governor Edwards wrote to the governor of each state, and the Utility Board wrote to each similar state commission, and the New Jersey State League of Municipalities wrote to a large number of individual cities, municipal leagues, interested individuals and organizations. Several events combined to assist these campaigns. In April the New York Telephone Company obtained an injunction from a Federal judge setting aside an order reducing telephone rates issued by the State Public Service Commission. A week later another Federal judge granted to the Chicago surface lines an injunction preventing the Illinois Commerce Commission from reducing fares from eight cents to six cents. In St. Paul it appeared as though a similar injunction would rob the city of the benefit of its efforts to keep down utility rates.

Only a half-dozen were present at the March hearing on the Bacharach Bill before the House Judiciary Committee, but the April hearing was attended by more than fifty state and municipal representatives from all over the country, and the May meeting had equally strong support. Mayor Hylan, of New York, the Corporation Counsels of New York and Chicago, the Mayor of St. Paul, the Deputy Attorney General of New York State, the Attorney General of Ohio, and the General Solicitor of the National Association of Railway and Utilities Commissioners appeared in person. The governors of thirty-four states have written in support of the bill and also the utility commissions of eighteen or more states. The Municipal Leagues of Kansas, California, Virginia, Texas, and New Jersey, and the New York State Conference of Mayors have gone on record for this bill, and the Minnesota League will undoubtedly favor it at its June convention. A large number of individual cities have realized the importance of this issue and have taken action.

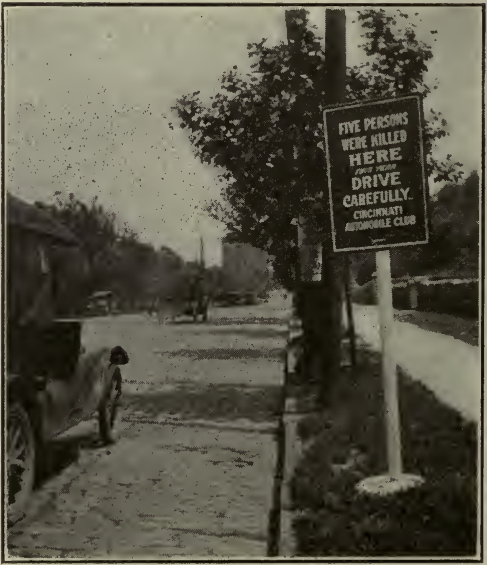
Opposed to this array of the representatives of the people is a strong, well-organized, but relatively silent, group of special interests. The Judiciary Committee displays reluctance to report the bill and seems inclined to delay matters by holding additional hearings until too late to pass the bill this session. The New York State Conference of Mayors unanimously endorsed this bill at its annual meeting at Poughkeepsie, June 7, just as the annual convention of the League of Texas Municipalities endorsed it a week or so earlier. Various newspapers have expressed the thought that this bill, a clear case of the corporations against the public, will become a political issue in certain quarters this fall. Meantime state regulation hangs in the balance and the outcome is doubtful.

A Telling Highway Warning

By Felix J. Koch

GOOD roads are perhaps the first and most actually important factor in bringing the motor-tourist and the commercial traveler by automobile into a city. But even the best of roads may contain their wayside pitfalls—bad bends, leading off into ditches and the like—which the trusting driver, the more trustful for the excellent road he finds himself upon, cannot suspect until too late. Against such things as these the publicity folk of the localities are mounting their signs at the waysides.

Just how these signs shall be phrased to convey their messages, and yet make it appear to the traveler that the city does want the motorist, that it welcomes and, in turn, wishes God speed to the stranger, becomes, very often, the subject of no small amount of planning and acumen. The picture is of one of the very latest and best efforts in this direction by the town of Addyston, Ohio.



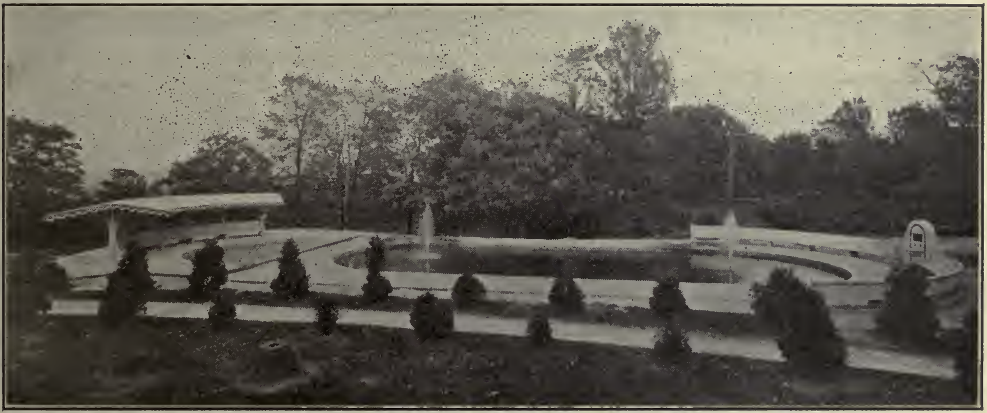
A WARNING THAT FEW WILL IGNORE

A Memorial Wading Pool in Rock Island, Illinois

By Theodore J. Moreau

Langford & Moreau, Landscape Engineers, Chicago, Ill.

IN the memory of our city fathers, the wading pool of their "days of real sport" was nothing more than the muddy puddle found after a summer shower, or possibly a frog pond or a creek, and in some instances the deep and dangerous waters of a lake or a river. While a large number of cities and towns can boast of no better facilities of this character, steady progress can be observed in the development of modern concrete wading pools in many of our progressive cities. Thanks to the generosity and public spirit of one of Rock Island's citizens, the children in at least a portion of that community can enjoy something more sanitary than the puddle or the frog pond and safer than the treacherous waters of a lake or a river.



AN ATTRACTIVE MEMORIAL WADING POOL FOR CHILDREN

The Helen Horst Memorial, designed by Langford & Moreau, is located in the heart of the residential district in Longview Park on a site offering more than an ordinary opportunity for a treatment that combines utility with beauty and distinction. It consists of a wading pool with semicircular seats flanking a drinking fountain on one end, and a curved, sheltered, double seat, of a pergola type, on the other end, overlooking a semicircular sand box and the wading pool on one side, and on the opposite side commanding a view of the lower plateau of the park at the foot of the bluff, with the city in the foreground and the Mississippi River in the distance. The existing planting and arbor-vitae-studded walks bordering one side of the memorial are being replaced with a mass planting of evergreens. This will provide a proper background for the fountain end of the pool and a setting for the dressing station now being constructed.

The pool structure is of reinforced concrete throughout, with a mottled brick walk laid in a basket-weave pattern. The dimensions of the pool proper at the water-line are 80 by 30 feet with a maximum depth of 25 inches of water at the center. At the edges the water has a depth of 6 inches, the curb at the edges standing 6 inches above the water surface. The floor of the pool proper is laid on a bed of clean sand, with tile drains to keep the foundation dry. The floor slab is in one piece without joints except at the outer edges against the curb, where the joint is calked with an asphalt compound. Because of the shape of the sloping floor, the thickness of the slab varies from 6 to 10 inches and is reinforced accordingly.

The walk around the pool has a minimum

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width of 7 feet, and is laid flush with the top of the pool curbing, with a slight pitch outward to drain away from the pool. The brick are laid smooth face up on a thin layer of sand spread over a base of 4 inches of reinforced concrete. Joints between bricks are grouted to form a surface which sheds water. The sand box also has a 4-inch floor of concrete provided with a drain at the lowest point.

The seats are of concrete, cast in sections and afterward erected on their foundations. The canopy supports, including posts, brackets, and girders, are of structural steel cast into concrete, the girders being bent to the proper radius to support the rafters of wood. The canopy is a light brown duck with a white trim.

The drinking fountain bowl, of cast concrete fitted with two constant-flow bubbles, is supported with a bracket projecting from a concrete panel trimmed with mottled brick and mounted with a bronze tablet bearing the following inscription:

HELEN HORST MEMORIAL
Dedicated to the
Children of Rock Island
By the Parents of Little Helen
Who Lost Her Life
In the Waters of Rock River

******

Henry W. Horst
Isaiah 45:15 1921 Mollie Horst

A more appropriate memorial could hardly have been conceived, and the happiness that it brings to the children of the community it serves is its finest tribute. Many other cities might well be enriched by similar improvements if their public-spirited citizens could pause for a moment on a hot summer day and watch the little tots, in endless number, splash away to their hearts' content, as they satisfy in a safe way their irresistible longing for water.

TECHNICAL HIGH SCHOOL, SCRANTON, PA.

1505 boys and girls in two daily sessions and 1017 students in the evening classes make use of this school, which on a one-session plan would accommodate but 850

Developments in Methods of Constructing Brick Pavements

By Arthur H. Blanchard
Professor of Highway Engineering and Highway Transport, University of Michigan

THE time is opportune to analyze the present status of paving brick and brick pavements, especially from the standpoint of types of paving brick and also because that leader of practice for many communities, the National Paving Brick Manufacturers Association, recently has given material aid in the simplification of the paving brick situation and is now advocating the general utilization of an efficient method of construction. In this discussion of brick pavements, only two important characteristics of an ideal pavement will be considered. It is generally acknowledged that satisfactory pavements must be durable and water-proof. A brief analysis of the several types of brick pavements will be given from the standpoint of these two essential characteristics.

In the early days of brick pavement construction, a sand foundation and a sand filler were employed. This foundation proved inadequate for even medium traffic, and the joints, being filled with sand, allowed water to pass through them to the sand bed below. A movement of the sand in the joints and bed naturally followed, with the resulting displacement of the brick under traffic.

A Permanently Satisfactory Filler

The first noteworthy development was the utilization of the cement concrete foundation, sand cushion and bituminous cement with which to fill the joints. These improvements indicated the application of sound engineering principles to the design of brick pavements. It was soon recognized that one essential feature of this method of construction was to utilize a bituminous cement which would adhere to the brick and would not be susceptible to changes in temperature to such an extent as to make it unsuitable for use as a filler. Unfortunately, some of the bituminous cement fillers employed had a tendency to chip or become brittle in cold weather and to flow in warm weather. The results were unfortunate, as the joints did not remain filled with bituminous cement and the exposed edges of the brick were chipped or broken off by the impact of iron-tired wheels or horses' hoofs. Fortunately, however, many brick pavements were laid with joints filled with asphalt cement having the proper physical and chemical properties, including a minimum susceptibility to changes in temperature.

In 1911 and 1912 the writer had the opportunity to inspect many sections of brick pavement with asphalt-filled joints, in municipalities in Indiana, Michigan, and Wisconsin. These pavements had joints filled practically flush with the surface of the pavement, although they had been subjected to traffic for from five to ten years. The pavements possessed the desirable durability, and the surfaces were waterproof. This type of construction has continued to be used by engineers who are familiar with the best methods of constructing pavements.

The next development was fathered by the National Paving Brick Manufacturers Association. It consisted in the substitution of cement grout filler for the bituminous cement filler. After several years' use of this method of construction, it was finally conceded that it was very difficult to secure uniformly filled joints by using cement grout and that a monolithic brick slab cracked, on account of temperature stresses, thus enabling water from the surface of the pavement to reach the sand cushion, which gradually became displaced. It also became evident that the action of traffic on the weak sections of the pavement surface and on portions of the brick wearing course over the areas of displaced sand cushion caused many failures of brick pavements. These failures were due primarily to contraction stresses. Failures, however, occurred, due to expansion stresses, such as the "blowing up" of sections of brick pavements.

The next developments were also introduced by the National Paving Brick Manufacturers Association, one of the new methods consisting in laying the brick on a cement mortar bed resting on a cement concrete foundation, and the other, in laying the brick on green concrete. In both methods the joints were filled with cement grout. These methods are not at present promoted by the Association.

West of the Mississippi, the Western Paving Brick Manufacturers Association has exerted considerable influence. This Association advocates the use of what is called vertical fiber brick with the rough surfaces uppermost, and recommends that the surface be covered with a squeegeed coat of asphalt and the joints filled with asphalt cement.

At a meeting of the National Paving Brick Manufacturers Association, held on December 7, 1921, the Association expressed "its confidence in asphalt-filled brick wearing surface for street and highway paving, properly designed and built with acceptable materials and thorough methods," and further declared "its preference for the asphalt-filled types of wearing surface," with the proviso that "preferment of the foregoing type of brick wearing surface for general use shall be without prejudice to any other type which may possess peculiar adaptation to special local conditions." In view of the fact that the Association has exerted a powerful influence over the practice of the construction of brick pavements in many sections of the country, it is hoped that, as a result of its latest recommendation, the durability of future construction in all sections of the country will not be jeopardized by the use of cement grout as a filler, but that bituminous cements possessing the desired characteristics will be universally employed.

In order to insure the use of a bituminous cement possessing the desirable practical minimum susceptibility to changes in temperature, the writer, in his private practice in northern states, has recommended, among other requirements, the following clauses covering the penetration of asphalt cement fillers:

Penetration at 25° C. (77° F.), 100 grams, 5 seconds, 30 to 40

Penetration at 4° C. (39° F.), 200 grams, 1 minute, not less than 15

Penetration at 46° C. (115° F.), 50 grams, 5 seconds, not more than 85

In order that the asphalt cement may be economically used to fill the joints, the writer advocates the use of conical pouring cans. The practice of squeegeeing asphalt cement over the surface of a new lug brick pavement is uneconomical, as a thin surface of asphalt cement is not an essential part of a properly constructed brick pavement. Whereas it may be practicable to secure good adhesion between asphalt cement and the rough surface of the wire-cut sides of paving brick, the experience of the writer indicates that asphalt cement applied to the glazed surface of paving brick will usually peel off after being subjected to intensive and heavy traffic.

The present types of paving brick manufactured require careful consideration from the standpoint of the efficient construction of durable and water-proof brick pavements.

Elimination of Varieties

A notable economic development resulted from the action of the Secretary of Commerce of the United States, Hon. Herbert C. Hoover, in calling a Conference on the "Simplification of Variety and Standards for Vitrified Paving Brick" in Washington on November 15, 1921. This Conference recommended the elimination of fifty-five out of sixty-six varieties of paving brick used in the United States. The eleven varieties which were retained include two sizes of plain wire-cut brick, two varieties of repressed lug brick, two varieties of vertical fiber lug brick, three varieties of wire-cut lug brick, and two varieties of Hillside lug brick.

Leaving out of consideration Hillside lug brick, highway departments east of the Mississippi River are primarily interested in the three types—plain wire-cut brick, repressed lug brick, and wire-cut lug brick. The two types of lug brick have been in successful use for many years and their inherent merits are well established. Many highway departments allow the use of either of these types under their specifications. It is well known that the utilization of lugs on the sides of these two types of brick is for the purpose of uniform spacing in the laying of the brick in pavements and for the providing of joints which can be filled satisfactorily.

In 1919, some of the manufacturers of vitrified paving brick began to manufacture a plain wire-cut brick. As a result of the United States Department of Commerce Conference, two sizes of this type of brick will be manufactured, namely, 3 by 4 by 8½ inches, and 3½ by 4 by 8½ inches. As these brick do not have lugs, it is apparent that two requirements relative to depth may be satisfied with one size of brick. For example, the 3 by 4 by 8½-inch brick may be used by highway departments which wish to lay brick with a 4-inch depth, and also by those departments which wish to use a 3-inch depth.

BRICK REMOVED FROM THE TEST PAVEMENT

Since the introduction of this type of brick, the writer has endeavored to determine its merits and the economy of its use. It is apparent that the following question would naturally arise: Will it be practicable to space the brick during construction so as to provide uniform and satisfactory joints? It was soon evident that the proper construction of a pavement surface of lugless brick would depend upon the ability of the pavers to satisfactorily and uniformly space the brick. Reports from contractors indicated that considerable difficulty was encountered, even leading to the use of artificial means, such as the employment of an angle-iron, to secure the desired joints in the brick surface.

Information relative to the results secured was so unsatisfactory that the writer decided to construct an experimental pavement in the laboratories of the Division of Highway Engineering and Highway Transport at the University of Michigan. He wishes to acknowledge his indebtedness to Professor John H. Bateman, Director, Michigan State Highway Laboratory, laboratory assistants and two engineers of the Ohio Paving Brick Manufacturers Association for their kind cooperation in the construction of the test pavement.

A Test Pavement

The experimental pavement was constructed within a wooden frame, 2 feet 6 inches in width and 8 feet in length, which rested on a cement concrete floor. A sand bed, 1 inch in thickness, was prepared, upon which 3½ by 4 by 8¾-inch plain wire-cut brick, furnished by the Metropolitan Paving Brick Company, were laid by one of the engineers of the Ohio Paving Brick Manufacturers Association. The section was laid to conform with average practice on contract work. A Texaco asphalt cement filler, having a normal penetration of 33, was heated to 350° F. It was poured by one engineer and squeegeed by another engineer of the Ohio Paving Brick Manufacturers Association, in accordance with the standard specifications recommended by the National Paving Brick Manufacturers Association.

On several rows of brick, complete measurements covering the widths of all end and side joints were taken before the application of the filler. The measurements, expressed in inches, of the end joints of a part of a typical row follow: 1/16, 1/64, ⅛, ¼, ⅛, 1/16, 1/64, 1/16, 1/64. The joints on one side of this row measured as follows, there being two measurements to each brick because the bricks were laid to break joints in adjacent rows: ⅛, ¼, 1/16, 1/16, ¼, 3/16, ⅛, ⅛, 1/16, ⅛, 5/16, 3/16, ⅛, 1/32. The measurements on the other side of this row of brick were as follows: ⅛, 1/32, 1/16, ⅛, 1/64, 1/64, 1/64, ⅛, 3/16, 3/16, ¼, 3/16.

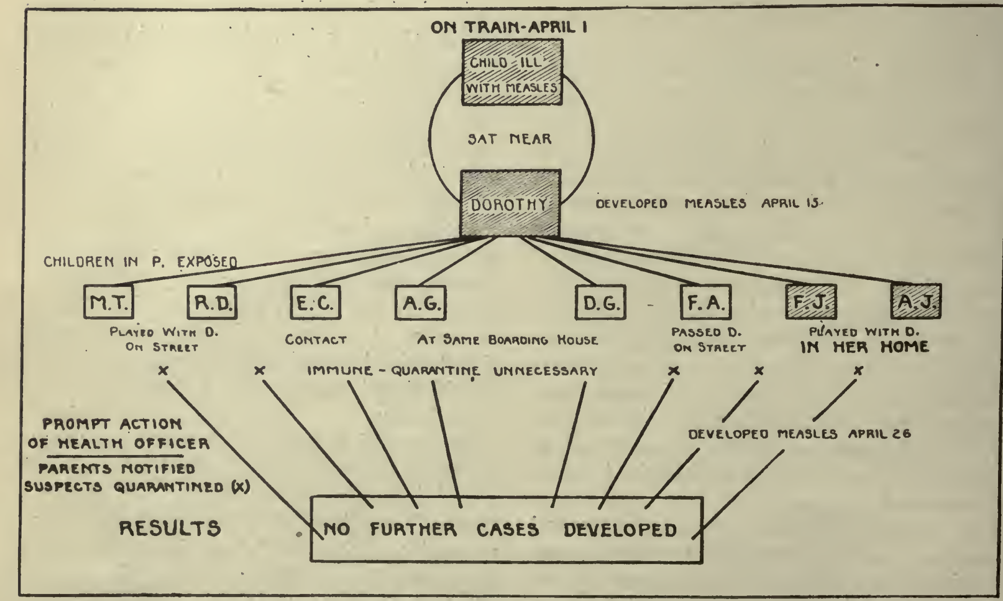
With the approval of the engineers representing the Ohio Paving Brick Manufacturers Association, the pavement was taken apart four days after it was laid. The depth of penetration of the asphalt cement on the sides of the brick was found to vary from 0.1 to 3.5 inches, the full depth of brick. The average depths of penetration on three sets of six consecutive bricks were 0.7, 1.2 and 1.6 inches. The illustration shows the penetration of the asphalt cement on the sides of eight typical brick taken from the test pavement.

The results obtained in the construction of the test pavement conform with the results which one might expect from the use of plain brick without some artificial means of securing suitable open joints. Even if some method, such as the use of an angle-iron, was employed to secure uniformly spaced plain wire-cut brick, there is no guarantee that the brick would not be displaced during rolling prior to the application of the asphalt filler.

Considering the established fact that successful asphalt-filled brick pavements may be constructed with repressed and wire-cut lug brick and that the use of plain wire-cut brick is accompanied with great risk relative to securing well-filled joints, the writer is of the opinion that conservative practice dictates that only lug brick should be employed. From the standpoint of the economics of construction, the use of the plain wire-cut brick is not justified. There is no indication at present that there is any material difference in the price per thousand of the lugless brick and the lug brick. Furthermore, granted an increase in cost of lug brick over lugless brick, the excess cost of lug brick is a good investment from the standpoint of insuring the construction of a durable pavement with the joints properly filled with asphalt cement.

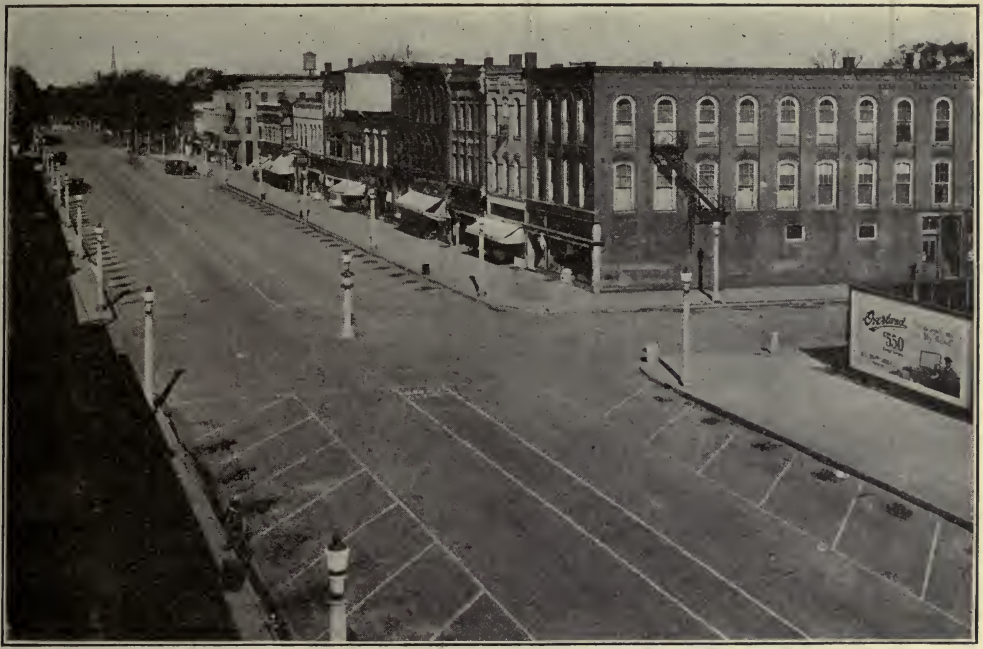
Acknowledgment.—From a paper read before the Eighth Conference on Highway Engineering at the University of Michigan.

Why Quarantine Should Be Enforced in Cases of Measles



IN THIS DIAGRAM THE NEW YORK STATE DEPARTMENT OF HEALTH EFFECTIVELY SHOWS THE VALUE OF QUARANTINE

Forward Steps in Municipal Affairs



WELL-DEFINED PARKING LINES PREVENT TRAFFIC MIX-UPS IN STURGIS, MICH.

City Managers

Solving the Parking Problem in a Small City

STURGIS, MICH.—Usually the parking question is associated with the larger cities, where the dense traffic, street cars, motor busses and other conditions interfere with normal parking. The small city which supplies a large agricultural community has the same problem to contend with, however, on a smaller scale, of course, when a large number of cars are in town over the week-end and in the evenings.

In Sturgis we have reached a satisfactory solution by marking the streets as indicated in the photograph above. This marking increases the parking space by preventing irregular parking and still assures each machine room enough for persons to enter and leave the car.

The safety zone in the middle of the street is used by bicycles and pedestrians when they are crossing the street. Traffic is required to remain within the two main driveways, and pedestrians are required to use the walks outlined in the street intersections, together with smaller walks in the middle of each block.

This parking plan has worked out very satisfactorily in this city (with a population of 7,500) and the cost is only about $20 per year for re-marking.

R. D. BALLEW,
City Manager.

Police Departments

Detroit Has Fine New Police Headquarters

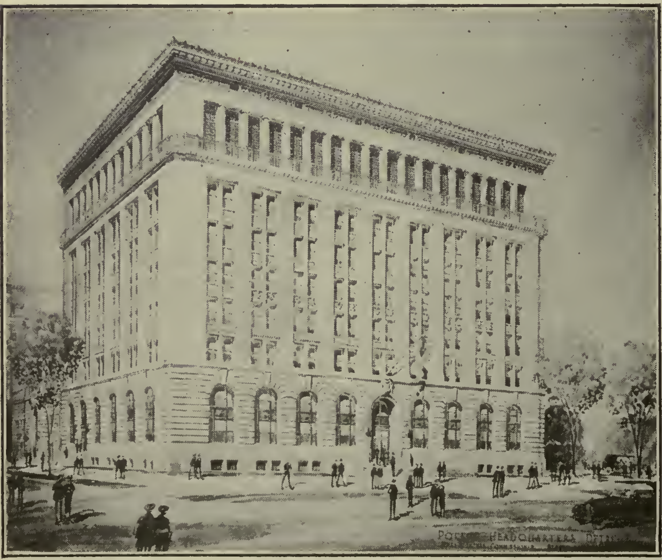
Detroit, Mich.—On September 1, 1921, ground was broken for the new Detroit Police Headquarters and First Precinct Station. It is claimed that when finished, this building will be far in advance of any other police headquarters in the United States. It will embody features which are the result of many conferences held in other cities.

One radical departure from old methods will be the placing of all cell blocks on the upper two floors of the building (above the railing shown in the picture), where every prisoner will have perfect sanitation with abundance of light and air and yet be removed from public view. This will be a great improvement over the present method of placing cell blocks in the lower part of the building where, to have the prisoners removed from the public, they must be placed where light, air and proper sanitation are difficult to obtain. There will be about two hundred cells and detention rooms in all, so that prisoners may be divided into classes and the first offender will not be made to rub elbows with the hardened criminal. The cells for female prisoners will occupy part of the eighth floor, directly over the Women's Division, and will be entirely in charge of women and distinct from the cell blocks for males on the ninth floor.

The building, which will cost $1,665,000, was designed by Albert Kahn, architect, Detroit. Adjoining the main building will be an armory or drill hall, capable of holding a large body of drilling men, or five thousand people in meetings. This building will also be fitted out with gymnasium equipment, including a suspended running-track having ten laps to the mile. Under the armory proper, and on the street level, will be a daytime garage or parking space for all department vehicles. Patrol wagons containing prisoners enter this parking space by one of four entrances and pass through and enter a covered courtyard between the wings of the main building, going through a heavy iron gate, electrically controlled. This courtyard is virtually a large detention room, having only heavily barred windows on all sides, the only exit being the registration room of the First Precinct Station, and thence to prisoners' elevators, the Detective Department, and cell blocks. This feature will be valuable in periods of great excitement, as wagon-loads of prisoners being brought in will not be unloaded until they are actually inside cell walls.

Another feature will be a police school, which, in addition to the usual course given probationary officers, will have a course of lectures each winter for every rank in the Department. Judges of the Recorder's Court, leading attorneys and superior officers of the Department will be the lecturers. There will be courses on such subjects as the collection, preparation and presentation of evidence, and each course will terminate with an examination which will play a part in making up the record of the officer for promotion. The building will be ready November 1, 1922.

JOHN G. KNIGHT,
Secretary to the Commissioner.



ARCHITECT'S DRAWING OF DETROIT'S NEW POLICE HEADQUARTERS, NOW NEARING COMPLETION

Recreation Departments

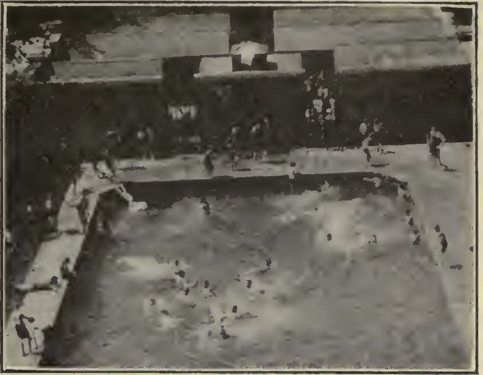
Philadelphia's Recreation Centers

PHILADELPHIA, PA.—To provide every boy and girl, man and woman, in Philadelphia with facilities so that they may enjoy the pleasures and benefits of a regular swim in a clean and attractive pool of water, is one of the ambitions of the Bureau of Recreation.

There are 32 pools in the city under the direction of the Bureau, 22 being in buildings and known as baths. The other 10 are outdoor pools which are run in connection with the city's recreation centers. An appropriation of $300,000 is now available for the construction of outdoor pools, and it is hoped that five new pools will be built soon to replace some of the baths which are inadequate for the needs of the community. The present baths have reinforced concrete pools and shower and locker facilities, but are entirely too small to accommodate the eager throngs that daily seek admission.

Fine outdoor pools are run in connection with ten of the recreation centers of the city. These pools are of reinforced concrete, 36 by 90 feet in plan, and from 3 to 9 feet in depth. They are equipped with locker and shower facilities, adequate for the crowds they accommodate. The construction is all of a substantial nature. The buildings and walls around the pool are of brick, and the floors and pavements are of concrete. The typical pool is equipped with a large waiting-room to take the waiting children off the street and also to limit the number admitted at one time. Some of the pools have a large pavilion instead of a waiting-room. The waiting-room or pavilion opens into a locker-yard, where an individual locker is provided for each person. This yard is surrounded by a high wall, is equipped with toilet facilities, and paved with concrete.

WADING POOL IN ONE OF PHILADELPHIA'S PLAYGROUNDS



FORGETTING THE HEAT IN PHILADELPHIA

In passing from the locker-yard to the pool, everyone must go through the shower-room, where six or eight ample streams of water thoroughly cleanse the bather. A turnstile exit allows the bathers to return to the locker-yards without passing through the showers.

All pools are open six days a week from nine A. M. to nine P. M. Certain days and hours are allotted for the various classes of swimmers. For instance, at many centers girls are allowed the run of the pool on Mondays, Wednesdays, and Fridays, except certain hours of the afternoon, and boys on the alternate days. In some sections the Monday morning class of girls is so small that the forenoon is given over to the boys. All pools have a daily swim from five to six P. M. for working men, boys being excluded between those hours. Some of the centers also give the noon hour to men. In many localities an early evening class for married women is well attended. An effort is made to adapt the schedule of the pool to the special needs of the neighborhood which it serves.

Under usual conditions the bathers are admitted in lines of 100 individuals each hour on the hour. Street clothes are stored and swimming suits put on in the locker-yard. The individual locker-key is suspended on a tape from the neck of the bather. In passing from the locker-yard to the pool the bathers walk in double file through the shower-room, where adequate streams of water thoroughly wash the suit and body. In order that the progress of the bathers (small boys in particular) through the showers may not be too rapid, the teacher in charge stations himself at the shower-room exit to supervise the thoroughness of the ablutions. The bathers are allowed the run of the pool and diving-board until five minutes before the hour, when all must be in the locker-yard, dressing. Just before the hour is up, the line is out of the yard and all is ready for the incoming line on the hour. At some of the centers in congested districts, as many as 2,500 people are allowed the privileges of the pool in one day. It is necessary at these centers to shorten the time allowance on each "swim" on hot days so that the maximum number of people may be taken care of. During the hot weather early last summer, the attendance at the 32 city pools averaged from 275,000 to 325,000 individuals per week.

In addition to police supervision, there is at all times a staff of teachers on duty at the pools. These teachers supervise the handling of the lines of bathers and direct the conduct of the bathers in the pool. During certain hours of the day they give instruction to classes in swimming, diving and life-saving.

A very important consideration in all pools where large numbers of bathers are accommodated, is the maintenance of the water in a sanitary condition. Here the Bureau of Recreation feels that Philadelphia should be placed at the head of the list, for the precautionary measures are second to none in the country. Three times a day, once during the morning, the afternoon and the evening, between the swims, a bag containing a special chemical compound is drawn through the water. The principal ingredient of this chemical is calcium chloride. This treatment keeps the water pure during the day. At nine o'clock, when he comes on duty, the night man opens the discharge valves, and allows the pool to empty. By midnight he has finished cleaning the lockers and pavements, and the pool is empty. He then enters the pool, cleans its walls and floor with a disinfecting solution and a large broom, washing it all down with a heavy stream of water from a hose. After the washing is completed, the outlets are closed and the water turned on. The night man then goes off duty, the day force turning off the water when the pool is filled.

Among the noticeable features of the Philadelphia pools are the orderly way in which the crowds are handled, the clearness of the water, and the spick and span condition of everything about the pool. The choice of concrete for the structure and surface for both the paving and the pool was a happy one. The surface of the pavement has a wood floated finish, and is not slippery under the bathers' feet. The walls and floor of the pool have a hard surface, which can be kept clean with a minimum of effort, and which insures the constant maintenance of a clean, sanitary condition and maximum protection against the spread of contagious diseases.

Some of the centers are also equipped with concrete wading pools for the little tots, which are very popular. The one illustrated is located at the Waterview Center in Germantown.

S. L. ROSE,
Chief, Bureau of Recreation.

Well-rounded Recreation Activities

Winston-Salem, N. C.—Nestled in the foothills of the Blue Ridge Mountains of North Carolina is a fast-growing city which is already widely known in the industrial world, especially for its manufacture of tobacco. It is now making rapid strides in the recreational field, and its progress during the past three years has been remarkable. The climate is almost ideal and the playground and community work continue on through the winter.

There are now eight playgrounds and three athletic fields under supervision. The playgrounds are equipped with modern apparatus and have basket-ball, volley-ball, and tennis courts. The athletic fields are spacious, having baseball diamonds and tennis courts. There are also two beautiful parks with fragrant flowers, shrubbery, and seats among the shade trees. Only one swimming pool is maintained for the public at present, but preparations are now being made to place one in every section of the city.

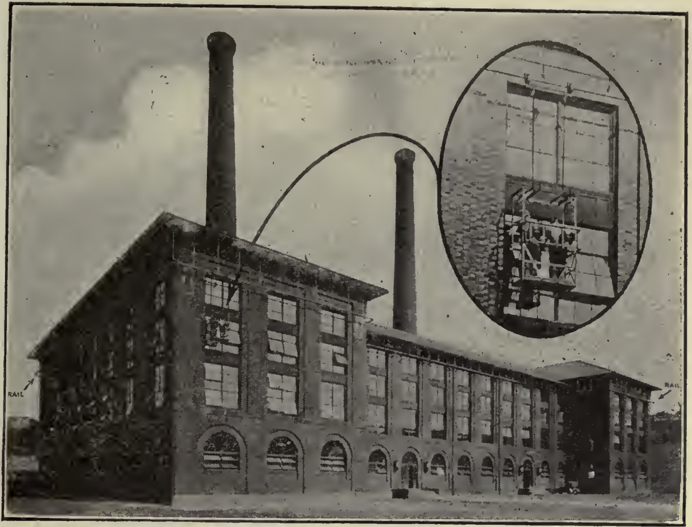
The recreational activities have been extensive and varied. Three baseball leagues, representing twenty teams, exclusive of the ones run by the Y.M.C.A. and industrial plants, are run each season. A six-team basket-ball league is held during the winter months, and this number will be greatly increased when more room is available. Two tennis tournaments are held annually. Lawn fêtes are held each year in connection with the physical education work of the public schools. Hike clubs are organized on the playgrounds, and the supervisors take the children for short hikes and a camp fire lunch on Saturday afternoons during the fall and winter months. An annual outing for the clubs of all the playgrounds is held and a whole day of organized games, chases, Boy Scout work, story-telling, and a camp fire roast. These activities are handled directly by the Parks and Playground Department of the city.

A beautiful and suitable spot on the banks of the Yadkin River is leased for three months by the Rotary Club of Winston-Salem. This site is used as a camp for the girls, the Y.M.C.A., and the Boy Scouts. Those who are unable to pay their expenses are sent there free and enjoy the same privileges as the rest. Huts and tents are furnished and the place is fitted up in true camp style.

Recreational work among the industrial plants of the city is conducted by the Y.M.C.A. through the generous cooperation of the institutions. Athletic games are played on the grounds during lunch hour and league meetings are held in the gymnasium of the "Y." All kinds of contests and socials are promoted, and a spirit of true democracy reigns. Several industrial plants of the city have recreational departments of their own.

Winston-Salem has also abolished all places which tend to corrupt and dissipate.

W. E. VAUGHAN-LLOYD,
Director, Parks and Playgrounds.



CLEVELAND WATER-WORKS, SHOWING WINDOW-WASHING EQUIPMENT, WITH INSERT OF CAGE

Water Departments

Window-Washing a Science Up-to-Date

CLEVELAND, OHIO.—The amount of money spent annually for the washing of windows is stupendous. Frequently on large buildings it is necessary to erect staging or other temporary means that involves labor and consumes time. Realizing this, the water-works engineers of Cleveland set about to find a better way to clean the windows of the new city water-works.

Their first idea was to erect an ordinary monorail with a specially constructed cage. The City went so far as to obtain bids on this, but the price proved prohibitive and the construction was so heavy and clumsy that the idea was abandoned. The water-works engineers, with the help of the Cleveland Crane and Engineering Company, of Wickliffe, Ohio, devised the installation shown in the accompanying illustration. The cage is equipped with two small winches by the use of which it is easily hoisted or lowered to any desired position. The absence of heavy supports, bracings and rods renders the construction very inconspicuous.

In this building there are about 4,600

windows, which can be cleaned by 3 men with this equipment in 12 days, two men being in the cage and the third bringing water and attending to them. At the rate of 60 cents an hour, this work would cost about $14.40 per day, or $172.80 for the job.

Without the use of the Tramrail, the best bid possible for a job of this kind where the scaffolding method would have to be employed is approximately $800. The difference is such that the system soon pays for itself. When it is once installed other uses readily suggest themselves, such as the painting of buildings, spouting, etc.

There are other advantages derived from the use of this new method of washing windows, chief among which should be mentioned the entire elimination of the element of danger from the task. With the Cleveland Tramrail, no life-belt is necessary This rail and its fixtures are of simple design and thoroughly standardized. Curves are no obstacle and neither are switches, for the rail can make as many turns as desired and actually turn in a 4-foot radius. The switches can be placed as close as every 3½ feet in any direction.

Another important feature is its ability to connect one department or building with another that is on a higher level, up to and including a grade of 12½ per cent. For transferring to higher levels than this or to a floor above or below, the Tramrail may be installed on any freight elevator and elevated. Consequently, it can pick up its load and put it down anywhere from the basement to the roof with but one handling.

W. J. WHITEHEAD,
Senior Assistant Engineer, Cleveland Water-Works.

Health Departments

Dayton's Child Welfare Campaign

Dayton, Ohio.—The Division of Health and Visiting Nurses' Association of Dayton conducted its fifth annual Child Welfare Campaign May 8 to 19; 1,427 babies were examined during this time.

This campaign has become an important local health feature, and many unofficial organizations cooperate to advertise it. While several cash prizes are still given, the campaign has grown entirely away from the usual "baby show" affair. Realizing that the babies are given a thorough examination, most of the mothers come prepared to ask many questions. The babies are examined on 125 points, and a rating is made of each child based upon a score card embodying many of the features of the one published by the American Medical Association.

SCORING BABIES IN DAYTON

One of the noteworthy features of this campaign is the choosing of the prize winners. This is done without the babies being present. The babies are divided into eight age groups, and the prize winners are chosen from among those scoring highest. That the examination is thorough is shown by the fact that after the 24 prize winners are chosen and a few days later are gathered together for the distribution of prizes, every one, mentally and physically, "looks like a prize winner."

The net result of this yearly campaign is the stimulation of unusual interest in infant care. The members of the cooperating organizations have an object lesson in the possibilities of preserving infant life, and the mothers themselves are shown that most of the ills of babyhood are preventable by proper care. These mothers are taught the value of regular examination of the babies by the family physician.

We consider that this general stimulation of interest in babies, rather than the discovery of a certain number of defects, is the most important feature.

A. O. PETERS, M. D.,
Commissioner of Health.

Essentials of Modern Street Lighting

History of Street Illumination and Its Basic Principles

THE earliest street lighting was adopted as a means of protection against persons criminally inclined. Then the byways were lighted by means of lamps placed along the walks. From this stage street lighting became a means of safeguarding traffic against collision and of revealing obstructions in the roadway. In recent years street lighting has been developed into what some consider ornamentation, the idea being to beautify important thoroughfares and to promote business by attractive artistic effects.

Street lighting is comparatively modern, as the following data indicate:

1558—Paris, the first modern city to attempt civic street lighting; inhabitants ordered to place lighted candle lanterns in front of houses.
1766—Pitch or resin bowls substituted for candle lanterns.
1809—First street lighting by illuminating gas in London.
1821—Illuminating gas used in Baltimore for street lighting.
1884—Arc lamps used in Philadelphia for street lighting.
1896—Gas mantle lamps used first in this country for street lighting.

The modern history of street lighting began with the invention of illuminating gas and assumed its second interesting phase with the development of the direct current series carbon lamp. To-day it is recognized that an adequate system of street lighting in a modern city is required to promote safety from attack and burglary, to prevent stumbling and collision, to enable one to recognize the passer-by, to create a sense of security, and to eliminate eye fatigue caused by continual passing from dark to light and vice versa.

What Is an Adequate Lighting System?

Primarily, a street lighting system, as the term implies, should be employed to light the street, or better still, to illuminate the roadways, streets, alleys and sidewalks so as to provide the desired protection mentioned above. Light can be considered as the cause, illumination as the effect. The mere placing of a light at any point will not produce the desired result—illumination.

The three cardinal basic principles to observe in street lighting are: 1, efficient generation of light; 2, efficient utilization of light; and 3, keeping the eye in an efficient condition for observation.

The efficient generation of light has been an accomplished fact for many years. Notable examples of the means employed are the Welsbach mantle, the magnetic electric arc, and the gas-filled tungsten lamp.

For the efficient utilization of light, it is clear that the light rays which primarily spread in all directions spherically must be gathered up and redirected to the street surface and not allowed to escape upward. Proof that the light rays of many present street lighting equipments are wasted skyward can be had on any foggy night, when the amount of light sent to the skies is evident. Proof that light rays can be directed like water from a hose is seen in the automobile headlight.

To keep the eye in an efficient condition to perform its function of seeing, there must be minimum "glare." "Glare" can be defined as a blinding effect upon the visual apparatus caused by light shining directly into the eye. Glare also causes a distinct feeling of discomfort, but lessening of ability to see in the presence of glare is of greater importance in this problem than discomfort. The blinding effect of glare is well known to anyone who has attempted to see when the light rays from an automobile headlight were shining into his eyes. Improperly designed street lights have a blinding effect similar to that of automobile headlights, and no system of street lighting that does not minimize this glare effect can be considered as adequate.

A further important item in keeping the eye in an efficient condition for observation is the matter of uniform illumination on the street surface. The eye is so constructed as to adjust itself to changing intensity of light. The light from the sun at noonday is 30 to 50 times as great as at dawn or dusk. We can see properly despite these changing intensities, providing the sun is high enough so that no glare blinds us. The intensity of full moonlight is only a small fraction of the intensity of sunlight or even of the average intensity used in interior lighting, yet it is possible to see perfectly in the moonlight because of the uniform illumination without glare or blinding effect.

PENDENT TYPE OF LUMINOUS ARC LAMP AT END OF BRIDGE, STAMFORD, CONN.

All streets should be equipped with units providing fair uniformity and freedom from glare, and the illumination should be varied to suit the traffic and business conditions. Streets located in the permanent business district should naturally have a higher intensity than those of a transitory business or a residence character. There should be a gradation of intensity depending upon the traffic and other prevailing conditions.

It is recognized that the efficiency of illumination of any system is of primary importance and must not be sacrificed to other considerations. Nevertheless, the esthetic importance must not be neglected nor overlooked. The problem of street lighting is one of the elements of city planning, and must be studied in relation to the future growth and development of the municipality. Proper emphasis should be given to the appearance of buildings and thoroughfares, and the lighting standards should be ornamental though simple in design. Utility and maximum efficiency should be coupled with esthetic principles.

Acknowledgment.—Prepared from a report of the Committee on Municipal Affairs of the Minneapolis Civic and Commerce Association, entitled "Basic Principles of Street Illumination for Use in Minneapolis."

Average Costs of Road Construction

THE Bureau of Public Roads has reported that 11,017 miles of Federal Aid road have been built since 1916. The table below gives the mileage of each type and the average cost per mile. The figures should be of interest as they are based on a large volume of work and are the most recent and reliable giving average results for the whole United States. The figures cover the entire cost of construction, excluding large bridges, and in a few cases the cost of engineering is not included in the table:

Type	Cost per Mile	Miles Constructed
Graded and drained......	$9,200	1752
Sand-clay	6,850	1338
Gravel	9,230	4309
Water-bound macadam....	14,000	294
Bituminous macadam......	25,720	382
Bituminous concrete.......	43,500	511
Concrete	36,600	2104
Brick	46,875	224

These figures are based on the entire period of operation of Federal Aid, but the major portion of the work has been done since 1918. During the period since 1917 there has been a general tendency to construct more substantial roads to meet the needs of modern traffic.

Tree Planting on Highways

By A. R. Hirst

State Highway Engineer, Madison, Wis.

MOST places which are intending to capitalize and encourage tourist traffic should pay a very considerable amount of attention to having their roads run, if possible, where the scenery is attractive or where lakes, rivers, mountains or forests can be seen well and be made accessible. If these features are not present, there should be the strictest adherence to utilitarian practice in selecting the shortest roads which will carry traffic safely and cheaply.

Preserve the Trees

Every tree which adds any beauty to the landscape should be saved, if possible, and where there are groups of trees offering effective relief, it is worth while to make changes of the center line to save these trees, even if additional right of way has to be secured on the other side. A good tree takes many years to grow and can be cut down in a few minutes. Most of us have been wasteful in our destruction of good trees and have not made the exceptions which should have been made in saving trees or groups of trees of distinctive character and merit.

Within the limits of slopes, brush and shrubbery, as well as all other vegetation, have to go. In many cases, however, the clearing and grubbing limits are defined as wider than the slope limits, and thousands of acres of effective shrubbery and flowers have been destroyed which could just as well have been saved. The clearing and grubbing limits should follow the slope line except in the Northern States where snow-drifting can be expected. In such cases low-growing brush cannot be encouraged, because it promotes snow-drifting unless the line of brush is well back from the edge of the cuts.

Probably not enough attention has been paid to buying additional right of way where snow-drifts occur and to planting shrubbery far enough back in the fields so that the snow will not be thrown upon the road cuts. This is probably the most effective method of keeping the roads open and should be used more generally. The choice between shrubbery and snow-fences as means of locating snow-drifts is probably close.

Trees Need Care

A great deal has been said about tree planting along the highways. It is to be encouraged if it is carried out and followed by an organization which has some permanency, but the spasmodic trumpet-blowing attempts to plant a few ineffective saplings on certain days and then think about them no more, have rather discouraged most highway engineers, who really believe in tree planting where the surrounding conditions permit. There have so far been more "nuts" bearing trees to plant, than planted trees bearing nuts.

A great deal of this work has been done without forethought and judgment. If anything really effective is to be done, it must be done by a state or county highway department in cooperation with the state forestry department, and not only must the trees be planted, but they must be carefully tended until they become old enough to take care of themselves. There will undoubtedly be advances in this direction in the next few years. With good care and judgment exercised in the selection and planting of trees of suitable character, there is nothing objectionable about planting trees along the highways, and there is much to be said in favor of it. Even if in some cases a bonus has to be paid to abutting farmers on account of losses due to shading, it is worth while from the public standpoint, and it is possible to secure such relinquishments from abutting farmers, when advisable, at a very reasonable cost, considering the artistic effects and real benefits to be secured. Even in well-timbered states there are sections where a little green on the landscape and a little shade are very welcome indeed.

These general remarks as to trees apply also to shrubbery. Planted with discretion, flowers and shrubbery of the right kind certainly add very much to the general roadside appearance and are worth money if the beautiful is ever worth money. All these matters, however, will have to be developed slowly, as a very small fraction of our people are willing to spend any considerable amount of money in highway adornment. In the opinion of most people, the highways are too badly needed to permit the spending of large sums in beautifying them. A good many feel that they cannot admire landscape or artistic effects so long as the roads are impassable, and they prefer to spend money in building the roads first and to develop the beautiful later.

This objection cannot be urged against saving what is already there, and much of this can be saved, not only without additional cost, but actually at less cost because of the low expenditure for clearing and grubbing. We should not, however, allow beauty to interfere with safety. It is a small solace to the injured or to the families of persons killed that accidents occur in, and are due to, beautiful surroundings.

Oaks are probably more generally satisfactory for street planting than any other group of trees, followed closely by elms and sycamores. Palms do not make good shade trees, though they are sometimes appropriate for formal effects. The silver and ash-leaved maples and the poplars are not often satisfactory.

House Numbers on the Curb

By Albert Marple

SOMETHING entirely new in the way of a location for the house number has just been introduced in the West. This idea is shown in the accompanying illustration and consists in placing the number on the side of the curbing in front of the home. This plan is of particular benefit to the person who is trying to find some particular dwelling while riding in an automobile or other vehicle, and would be worth thousands of dollars a year to merchants whose employees are called upon to make deliveries during both night and day.

Heretofore house numbers have been placed at any point that suits the personal desires of the home owner. The number of one house may be above the porch, of another, on the porch railing, and of still another, on one of the posts of the porch or beside the door. There has been no attempt at uniform numbering of homes. It has been done in a haphazard manner so that anyone desiring to locate the number of any particular dwelling has little idea where it may be found. If the curb home number was universally used, it would be a simple matter to locate any home at any hour.

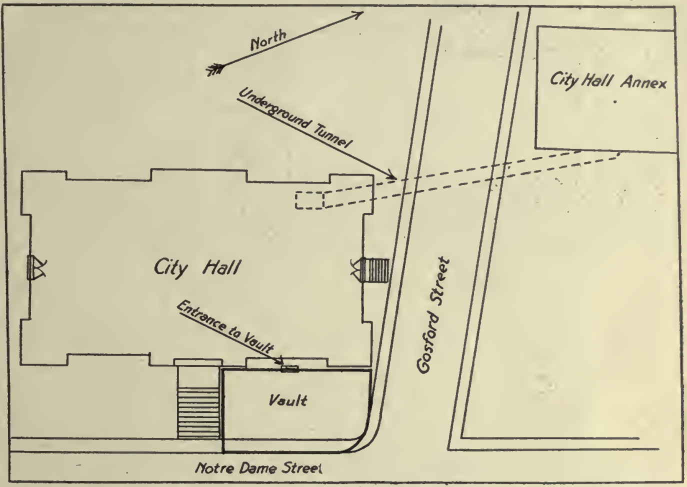
These 6-inch numbers are stenciled on the curb with lampblack and oil and when once placed there will last for years. Prior to the stenciling operation the curbing is cleaned perfectly with a stiff steel brush. It costs just twenty-five cents to have the complete number stenciled on the curb.

A HOUSE NUMBER WHERE THE DELIVERY MAN CAN SEE IT

Lessons from the Montreal City Hall Fire

Lack of Fire Protection Facilities Causes Loss of Building, But Underground Vault Protects Valuable Records

LAST March the Montreal City Hall was added to the long list of large public buildings which have been destroyed by fire. The fire, of unknown origin, completely gutted the large structure, the estimated loss being over $500,000. Unfortunately, no insurance was carried, so that the loss is a direct tax on the people of the city, with the exception of a municipal fund which has been set aside during the last few years to cover any possible loss.



PLAN OF CITY HALL, SHOWING LOCATION OF VAULT AND ANNEX

According to the report of D. C. Winsor in the *Quarterly Journal* of the National Fire Protection Association, the fire was discovered by the night watchman and an alarm turned in, which was received at fire headquarters at 11:44 P.M. The second alarm was sounded at 11:51, a third at 12:02 A.M., and a fourth at 1:08 A.M. A total of 29 hose companies, 24 ladder companies, 13 steam fire engines, 4 motor pumpers, 6 salvage wagons, 1 water tower, and 2 siamese wagons, besides the usual fuel wagons, etc., were in attendance. Forty streams, using 26,000 feet of hose from hydrants and engines, were used, besides the water tower; 3,069 feet of ladders were raised, and 250 salvage covers spread. A large number of covers and abandoned hose lines were lost when the roof and floors collapsed.

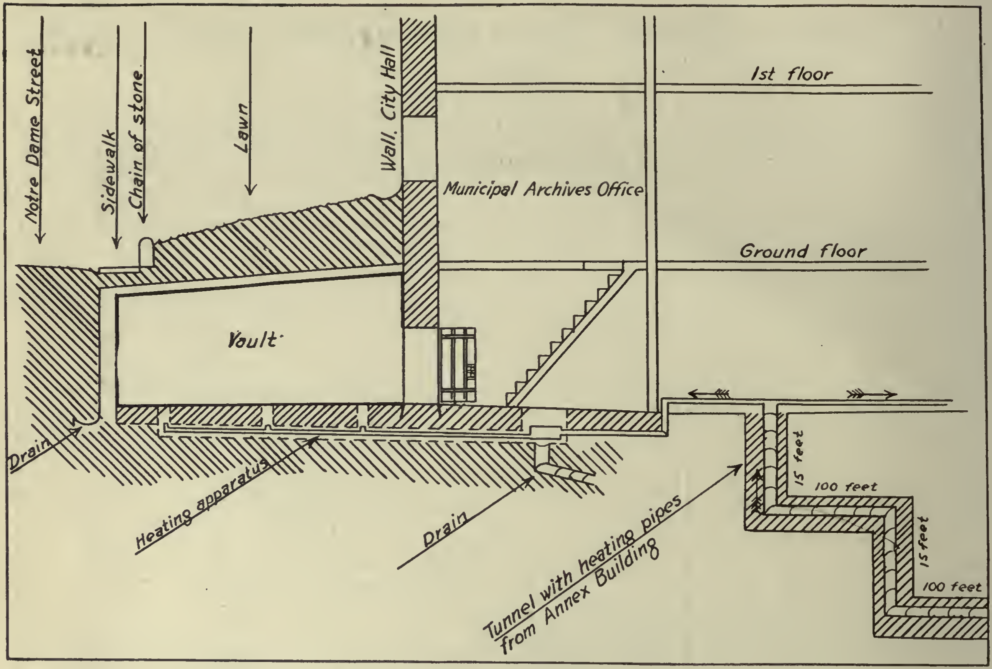
The fire spread through the roof and to each of the towers and all were destroyed; the last tower to go was the southwest, where the fire was stopped before it burned down through the floors. With the collapse of the various towers and the roof, the floors were carried through to the basement, and practically only the walls of the building and the towers remained. The floors of the tower that was saved were afterwards carried down by the collapse of a large chimney during a strong wind a few days after the fire.

There are two lessons to be drawn from this fire: first, it serves as another illustration of the folly of this type of heavy joist construction, especially for large public buildings; and, second, it shows the value of well-designed fire-proof vaults for the storage of priceless records.

Features of the Underground Vaults

The vault is entirely constructed outside of the foundation of the City Hall and under one of the lawns and the sidewalk situated in front of the building. A single entrance door of the burglar-proof type, situated inside of the foundations of the building, gives access to the vault, the floor of which is one foot higher than that of the cellar. The inside dimensions of the vault are 100 x 80 feet, with an average height of 12 feet.

A heating system is installed in concrete



SECTION SHOWING PORTION OF CITY HALL AND VAULT

conduits which are laid slopewise under the floor in order to facilitate the flow of the water that might gush out in case any part of the piping should break. A drain is laid at the lowest point of these conduits. There is also an outside drain which conveys water from the adjoining ground to the main sewer.

Air spaces are provided for in the floor, walls and roof by the combined use of terra cotta, concrete and steel. Each of these air spaces has a condensation drain. All proper attention was given to the waterproofing of the exterior parts, a special material being used, together with 5-ply felt. Ventilation is secured by means of a fan and motor.

The roof was constructed so as to withstand the weight and impact of the walls of the City Hall, in case the latter should collapse. It has a sloping top which allows rain water, melting snow, etc., to flow towards the roadway.

The construction, which was begun in 1919, was completed in 1920 at a cost of $55,000; $40,000 additional was spent for metallic equipment for the vault.

The City Hall is situated at the top of a hill, near which is another building, known as the "City Hall Annex," which was erected only a few years ago on the side of the hill at a level 30 feet lower than that of the main building. A tunnel, 200 feet in length, the inlet of which is on the same level as the floor of the cellar of the Annex, connects the City Hall with the Annex. When the fire broke out, this tunnel allowed the immense quantities of water which were poured on the flames to find their way to the Annex, the cellar of which was submerged, thereby preventing the vault adjoining the main building from being flooded. This is one of the main reasons why the vault was constructed on its present site. The vault was opened on the second day after the fire and showed no signs of water infiltration, and the documents were found to be intact.

We are indebted to P. L. N. Beaudry, Archiviste, for the information regarding the underground vault and the sketches used to illustrate this article.

City officials must take care to erect municipal buildings or replace burnt structures with those that will resist fire ravages and that, in themselves, will be non-inflammable.

The School Lunch in Rural and Urban Districts

A Study of Conditions, with Recommendations for Their Improvement

IN the first selective draft, 28 per cent of all of the men called were rejected as unfit to bear arms. Many were under weight, many showed signs of undernourishment. Others were suffering from defects which should have been corrected in childhood. A large number of these might have been avoided if proper precautions had been taken. The child who is properly nourished runs far less chance of contracting contagious diseases, and the results are less serious than in the undernourished child.

Statistics gathered recently in New York City showed that at least one-third of the children in the public schools were so much below the normal standard of growth as to call for special nutritional care. It is probable that these figures are representative of other large cities. Recent reports concerning the condition of children in the country schools of Iowa indicate that these are no more physically fit than city children. A country nurse found 23 out of a class of 29 more than 10 per cent below weight, and another reports from a rural school that all were more than 10 per cent below standard. A recent summary of reports on over 10,000 Iowa school children shows that 20 per cent of the city children are seriously under weight, and in the rural schools 30 per cent of the pupils are in this classification.

It is apparent that there is need of much greater care of the children, both for the future well-being of the race and the happiness of the individual.

Faulty home and school hygiene, infections, diseased teeth and tonsils and enlarged adenoids are common causes of undernutrition among children, and all such conditions should be remedied. But the most frequent cause is wrong food, sometimes too little, but more frequently too little of the right kind. Children suffering from undernourishment are found not only among the poor, but also among the well-to-do.

Extension Bulletin No. 70, University of Iowa, gives a valuable discussion of the selection of food for children and a number of suggestions for the school lunch box, chiefly applicable to the parents and the home. This is followed by a treatise on the supplementary hot dish in the rural school.

EXPERIENCE THE TEACHER

Experience has shown that where hot lunches have been introduced, there has been better attendance on the part of the children because of their better physical condition. There have been fewer failures, and the average class grades have been higher. The money spent on the re-education of backward children or the repeating of grades of courses might far better be spent in making possible the hot school lunch. Mental efficiency is dependent upon physical well-being. A child's brain cannot work if he is not supplied with the proper food. A tired, inactive child has a tired, inactive brain.

The Lunch of the Rural School Child

The usual lunch box fare which a child has at noon does not contain all of the needed food materials. It is not easy to include day after day all the foods which the child should have. For example, dishes which carry an adequate amount of milk are difficult to carry. Vegetables are seldom included, for similar reasons. In order that the child may be adequately fed at noon, same means should be introduced in every rural school for providing at least one hot dish. Fortunately, milk, one of the foods which make the lunch which the child brings from home more nearly complete and well-balanced, is most available in the country. Milk is not easily transported in the lunch boxes and there is no way of keeping it in the school; therefore, the supplementary hot lunch dish in general should be made largely of milk. The following dishes are suggested for hot dishes during a four-weeks period. All of these are so simple in their preparation that pupils of the upper classes may do all the work involved with but little instruction from the teacher.

The menus are so arranged that on Mondays dishes which require the least time to prepare are served. On other days in certain cases it may be necessary to start the preparation the afternoon before.

THE SUPPLEMENTARY HOT DISH

Week	Monday	Tuesday	Wednesday	Thursday	Friday
I	Cocoa	Cream of bean soup	Scotch broth	Cream celery soup	Scalloped corn
II	Cream potato soup	Scalloped rice and cheese	Scalloped potato	Vegetable soup	Fish chowder
III	Cream corn soup	Cream of chicken soup	Cocoa	Cream spinach	Corn meal or rice or hominy with milk
IV	Cream tomato soup	Delmonico potatoes	Cream pea soup	Salmon soup	Corn chowder

How to Obtain Supplies

The method of obtaining the food material for the noonday meal must be worked out by the individual community. In general, it is better for each child to pay enough for the individual lunch served to cover the cost of material. In certain instances the cost of material may be defrayed by the school or by a local organization, or the necessary food material may be brought from the homes by the individual pupils, each home in turn being responsible. If the latter method is adopted, it will be necessary for each mother to know beforehand on just what day she is to furnish the material, so that she may make her plans accordingly.

Whatever method is adopted, it must be such that every child will receive his share of the food furnished. In country homes it frequently happens that food is more abundant than pennies, and the child who cannot pay for his lunch in money may be made uncomfortable. For this reason, the first method suggested is least desirable. It must not be forgotten that children are quite as sensitive as adults, if not more so, and under no condition should the child who has little be made uncomfortable because he is unable to cooperate in the same way as the other children. The main purpose of the noonday lunch is to make the children more nearly physically fit. The arrangements must be such that all children may share equally. Increase in the school budget incident to the introduction of school lunches decreases the cost of education, because there will be fewer failures and fewer children repeating grades.

Equipment for the Rural School Lunch

The equipment for the noonday lunch will vary with the type of school. The individual equipment, bowl, cup and saucer, etc., may be brought from home. Less confusion will result, however, if all is owned by the school.

EQUIPMENT FOR THE RURAL SCHOOL

- 1 coal oil stove
- 1 portable oven
- 1 aluminum or granite kettle, 8-quart
- 1 saucepan
- 1 saucepan, 2-quart
- 1 double boiler, 6-quart
- 4 white enameled bowls
  - 2 2-quart
  - 1 5-quart
  - 1 pint
- 1 ladle, long handle, holding one cup
- 4 spoons
  - 2 tablespoons
  - 2 teaspoons
- 1 meat grinder
- 3 knives
  - 1 butcher
  - 1 paring
- 2 forks
  - 1 small
  - 1 large
- 2 strainers
- 1 wooden spoon
- 1 scrubbing brush
- 1 can opener
- 1 baking dish, 3-quart
- 1 dipper
- 1 teakettle
- 1 water pail
- 2 trays
- 4 dish-towels
- 2 dish-cloths
- 1 "Mystic Mit"
- 1 dish-mop
- 2 dish-pans
- 1 dish-drainer
- 24 cups and saucers
- 24 soup bowls
- 24 serving plates
- 24 soup spoons
- 24 teaspoons
- 24 forks
- 1 quart measure
- 1 asbestos mat
- 1 Dover egg beater
- 1 measuring cup
- 1 wire potato masher
- 1 fireless cooker (This may be made by the class in manual training)
- 6 pkgs. paper napkins (500 each)

A cupboard for holding the necessary materials and cooking equipment may be built into the lower part of a kitchen table, if a kitchen cabinet is not possible. The top of the table may be covered with white oilcloth. A one-compartment fireless cooker will help materially in decreasing the labor involved in preparing the lunch. The equipment listed above is planned for a class of 24. By adding more serving dishes, it may be made to serve double the number. Bak-

PUSH-CART LUNCHES ARE UNSANITARY AND UNWHOLESOME

ing powder tins, mason jars or tin cracker boxes may be used for supply containers.

Serving the Hot Dish

It is almost as important to teach children how to eat as to teach them what to eat. Most of the actual cooking will need to be done before the lunch period, the preparation being done before school. At the close of the last recitation there should be a few minutes for exercise before the food is served. Discipline should be relaxed, hands washed and desks made ready for the noonday meal. A paper napkin may be placed on the desk, and the bowl and cup and saucer and the requisite utensils arranged in an orderly manner. The girls responsible for the hot dish may act as waitresses. It is convenient to serve the cocoa or cream soup from a pitcher. The scalloped dish may be served in suitable dishes and passed on a tray.

Although a certain amount of discipline must be maintained during the lunch period, there should be considerable freedom. It may be necessary to teach table manners, but this should be done in such a way as to make no one unhappy. Scientific investigations have taught us that a cheerful environment at meals materially aids digestion.

It is a common fault among children to eat too rapidly and to use water to wash down improperly masticated food. Water may be taken freely with meals, but it should be taken between bites and not when food is in the mouth. A word from the teacher with an explanation of the effect of too rapid eating will do much toward forming good eating habits. After lunch the desks should be put in order, the dishes placed on the service table, washed and put away.

Noonday Lunches in City Schools

It is as important that the school lunch be introduced into the city schools as in the rural schools, for here are many children who for various reasons cannot go home for the noonday meal. Sometimes the distances are too great; often the mothers are away all day working in the factory or shop. The children are given a few pennies with which to buy food; this is spent at the corner grocery for pickles, candies and other sweets or at the push-carts for unsanitary and unwholesome food. Not infrequently it has been found that even in the homes to which the children return at noon the meal is inadequate. Many mothers fail to appreciate the full significance of food for children and serve a light lunch, preferring to prepare the more hearty meal in the evening when the father is at home. Moreover, the noon recess in many instances is far too short. In order to get back in time for the afternoon session the children eat their lunch hurriedly, a condition which results in the taking of too little food or in improper mastication.

CARNEGIE PUBLIC LIBRARY ALBANY COUNTY, LARAMIE, WYOMING

WITHDRAWN

In the small city or the consolidated school, one lunch may be served to all. When children eat together, especially when there is a certain amount of competition

THE SUPPLEMENTARY HOT DISH IN THE RURAL SCHOOL introduced relative to gain in weight, food prejudices are quickly overcome. No child desires to be smaller and less strong than his companions. Weekly weighing and plotting of growth curves will help materially in getting children to eat food which makes for growth. In these schools the noonday lunch is frequently directed by the domestic science teacher.

Where more workers can be employed, as in the larger schools, there may be served a variety of lunches, each so arranged as to fulfill dietetic requirements. To allow children to select their lunch from a variety of dishes is unwise, for it has been demonstrated that man's instincts fail when it comes to food selection. Only the child trained in right food habits will select milk instead of candy. Menus served should be simple and wholesome. As in the rural school, whole milk, not canned, should be used freely in the preparation of the dishes, for the amount of milk which the average school child takes is far too little.

The following menus are suggestive of what may be served at any school at very low cost:

Cream pea soup
Bread-and-butter sandwiches (2)
Apple sauce—cooky
Cream of bean soup
Browned crackers
Apple tapioca pudding with top milk

Vegetable soup
Egg sandwiches (2)
Rice pudding
Macaroni and cheese
Jelly sandwiches (2)
Cocoa

During the pre-adolescent period (11 to 14 years) both boys and girls need more food than is often considered necessary. The ravenous appetites at this period are an expression of physiologic needs. Lack of appreciation of this and failure to provide enough food explain in part the undernourishment of school children. Therefore, in planning the luncheon menus, provision should be made for the purchase of larger quantities. For example, in menu No. 1, although two sandwiches are the usual number served, the child should be able to buy more, allowing some variety.

The lunch room in the large school can best be handled by trained women who understand the food needs of children. The management should be under the direction of the school authorities. In general, the price of the lunch should cover the cost of the food, the overhead charges being borne by the school.

The Mid-Morning Lunch

Children who are greatly undernourished or who are suffering from certain forms of disease need a mid-morning lunch. In general, this should consist of milk and a bread-and-butter sandwich or a bowl of warm milk soup and a cracker. In large cities these children are frequently assembled in one school where special provisions are made for feeding them. Where such children are not segregated, other means must be devised. In schools where there is a cooking laboratory the mid-morning lunch may be served here. In other schools arrangements may be made between the home and the school. The important thing to remember is that these children must be fed and that the mere question of inconvenience should not be allowed to stand in the way of the child's getting the required food.

The One-Session School

Throughout the United States there are a large number of high schools and an increasing number of elementary schools which have but one session. These usually begin at 8 or 8:30 A. M. and last in some cases until 1 or 1:30 P. M., and in others until 2:30 P. M. From 20 minutes to half an hour is the usual recess period. In a few of these schools a hot lunch is furnished; in others, it is possible for the children to purchase milk, cocoa, sandwiches, sweet chocolate, etc. Many of the schools make no provision for furnishing lunches. In these the children either bring their lunches or eat what a near-by grocer or street vendor can supply, or they eat nothing until they return home. In the latter case, when the child reaches home he is often tired from lack of food. The family has eaten at the usual time, between 12 and 1. His meal has been kept warm, it is frequently dried and he must eat alone. The result is that only the food which appeals most strongly, the meat and the sweet, is eaten.

If school boards see fit to make the one-session period the order of the day, they must be equally zealous in making provision for the hot noon lunch, and sufficient time, not less than forty minutes, should be allowed for this. Experience has shown that where hot lunches have been introduced, there has been better attendance on the part of the children because of their better physical condition. There have been fewer failures, and the average class grades have been higher. The money spent on the re-education of backward children or the repeating of grades or courses might far better be spent in making possible the hot school lunch. Mental efficiency is dependent upon physical well-being. A child's brain cannot work if he is not supplied with the proper food. A tired, inactive child has a tired, inactive brain.

Acknowledgment.—Illustrations by courtesy of University of Iowa Extension Bulletin, Iowa City, Iowa.

A Great City-Planning Project on the Pacific Coast

By Charles H. Cheney

City Planner

THE largest single piece of city planning by private enterprise ever undertaken in this country for permanent development will be the new Palos Verdes Project in Los Angeles, now being financed through nation-wide underwriting. We have the great example of Washington, D. C., and possibly one or two other cities well planned in advance and built by public enterprise, and our great expositions have furnished stirring object-lessons in what can be done for temporary dream cities by working to a carefully thought-out plan. Now what city planners have long been urging for permanent city building seems likely of early accomplishment.

The Palos Verdes Project contemplates a new suburb which, though much larger, will be similar to Roland Park, Baltimore, Forest Hills, L. I., St. Francis Woods, San Francisco, etc., except that there will be a greater proportion of low-priced homes and home-sites. A marvelous piece of ground has been secured, containing 16,000 acres (25 square miles) and including almost 14 miles of ocean shore, at the southwest corner of the Los Angeles metropolitan area, with Catalina Island opposite.

The underwriting calls for a total expenditure of $35,000,000, work to proceed as soon as $15,000,000 of this amount is available. Several million dollars has already been subscribed, and it is expected that the fifteen-million mark will be passed this summer. Preliminary estimates of improvements include the following items:

Home building fund	$5,000,000
Streets and roads (125 miles concrete-paved)	6,000,000
Sewers	1,800,000
Water system	1,650,000
Cost of land	$5,000,000
Ornamental plantings, Art Jury endowment	1,300,000
Hotels and clubs	2,000,000
Parks, schools and playgrounds	2,000,000
Three civic centers with business blocks	3,000,000
University	1,000,000
Transportation	4,000,000
Unapplied, taxes, etc	2,250,000
Total	$35,000,000

The $5,000,000 home building fund is expected to finance the building of several thousand houses, arrangement for second mortgage loans being provided in the trust agreement, and title already being held to the land. It is proposed to use part of this sum for the organization of copartnership housing, similar to that in England, in order to furnish working men's homes in quantity on easy terms, and with maintenance and up-keep provided. No buildings can be built anywhere on the property unless the plans are approved by the Art Jury, which will be a permanent body, endowed with sufficient funds to do real work. Restrictions will be similar to those of Roland Park, Baltimore.

The staff appointed to develop the project includes Olmsted Brothers of Brookline, Mass.; Charles H. Cheney, city planner; H. T. Cory, chief of engineering; Hunter Liggett, supply service; Myron Hunt, chairman Art Jury, and others of national reputation. All funds are held and administered by the Title Insurance and Trust Company of Los Angeles, as trustee.

Preliminary to the adoption of any general city plan, a committee of the staff will this summer visit and check up on the principal city planning and housing schemes of the country, in order to take advantage of as much previous experience as possible.

Underground Leakage---Its Relation to Mains and Services

Results of Careful Surveys in Chicago Given in Detail

By Thomas F. Wolfe

ONE of the most convenient ways of reporting underground leakage in flow lines and distribution systems is to say it is so many gallons per day per mile of pipe, or is so many gallons per day per foot of joint. Either of these figures is a fair indication of the efficiency of the transmission system only when there are no service connections to it. As soon as other means for water to get away are introduced, it is absolutely unfair to report or consider leakage as a function of the length of the main. Unfortunately, a better system does not readily offer itself, because of the way in which leakage figures are arrived at. It is also unfortunate that the method of arriving at the amount of water lost in transmission involves so much guesswork, because the lack of accuracy is responsible to a great extent for the fact that large water losses are so easily condoned.

In determining the amount of water getting away underground, the usual way is to account for all that is fairly measurable and then to ascribe the remainder to leaks. This involves considerable estimating, and the net result, as far as unaccounted-for water is concerned, is nothing more than an estimate and on account of its unreliability is not taken as seriously as it should be. In fact, many water-works men have come to look upon a large underground loss as a legitimate expense and, consequently, to disregard it. In reality, there is small excuse for this condition, because it is a fact that pipe can be laid so that it will be almost absolutely tight, and if proper material and workmanship are used, there is no reason why the pipe cannot remain tight indefinitely.

In looking over water-works statistics, it is not at all unusual to find many systems reporting losses of from 20 to 50 per cent of the water pumped. If this were true of those cities and towns where water is still sold on a flat rate basis, it might be ascribed to waste within the premises. As a matter of fact, such is not the case and many towns that are 100 per cent metered are unable to account for the entire pumpage without charging off a considerable percentage to underground losses. Possibly, all leaks cannot be eliminated, but a more serious consideration of the reason for leaks will at least greatly reduce the percentage of unaccounted-for water.

Tests in Chicago

The thought that services are responsible for a large part of the water loss is not at all new, but it may be worth while to consider some accurate data pointing out the truth of this statement. Tests of parts of the underground system in Chicago, made either by the writer or under his direction, give some interesting data in this connection. A test was made on the Stock Yards in Chicago, where it was comparatively simple to measure the total flow in the district under test and where practically the entire consumption was metered. The Stock Yards occupy an area of about one mile square, the eastern half of which is occupied mostly by cattle-pens and is not supplied with city water. The remainder of the Yards is closely built up with packing plants, where great quantities of water are used. Every service in this entire district except those supplying fire engine houses and public drinking fountains is metered, and with the exception of a few ¾-inch services supplying elevated stations and isolated buildings, all are of cast iron. In other words, this might be considered as a system free from service leakage, as the services themselves are constructed in exactly the same manner as the mains.

In conducting this survey, the mains carrying water into the Yards were shut down with the exception of two 24-inch mains, one carrying water from the Twenty-second street pumping station, the other from the Sixty-eighth Street pumping station. This created a number of dead ends, and in order to avoid any danger from a limited supply in case of fire, a man equipped with a valve key was stationed at one of the fire engine houses within the limits of the Yards, with instructions to operate such valves as would increase the supply in case of fire. It so happened that during the period of the test, no fires originated in this territory; consequently, the valve arrangement was not disturbed. Pitometer taps were installed on each of these two supply mains and traverses were very carefully run. All meters were read at the beginning of the test, and the reading was repeated at the end of the run and the daily rate of consumption established from these readings. According to the pitometer, the rate of consumption varied from a minimum of 6,960,000 gallons per day to a maximum of 24,100,000 gallons per day, and the pressure from 24 pounds to 37 pounds. The daily rate of consumption was plotted on a curve and the average daily rate computed. This was found to be 14,562,000 gallons per day. The rate as shown by the meters was 13,782,000 gallons per day. This leaves 780,000 gallons per day to cover the following items:

	Gallons per Day
Service to three engine houses	21,600
Two continuous drinking fountains	14,400
Hydrant leakage	*35,100
Water used from fire hydrants for street washing	10,000
Meter slippage (estimated at 2½ per cent)	366,000

* Based on average hydrant leakage all over the city.

This leaves 2.28 per cent of the total flow into the district unaccounted for. The figure indicates that, with service pipe leakage eliminated, the amount of unaccounted-for water is negligible.

We will now consider tests made on various streets in districts where conditions are different; that is, instead of an all cast iron system, we have a cast iron main and service pipes of other material. For the past five years, it has been the practice in Chicago to test each street for leaks prior to laying pavements. Not only are the tests made, but the leaks are located, and over 92 per cent of the water found getting away in these streets has been stopped. This intensive leakage survey naturally brought to light the exact nature of the leaks. The streets tested can be considered average cases, because in some the mains and services were just laid, while in others the pavements to be laid were replacing other pavements that had been worn out and the mains in these streets were from twenty-five to seventy years old. The tests are conducted in the following manner:

The section of main to be tested is shut down and all services shut off at the roundway at the curb. A 1-inch meter (or where the section is large, a 2-inch meter) is then by-passed around one of the closed valves through a 2-inch hose connected to 1-inch corporation ferrules installed on either side of the closed valve. If any leakage is indicated, an aquaphone is applied to a shut-off rod on each roundway, and as a rule, if the leak is in any place on that particular service or on the main near the service, it can be easily heard. With experience, a man can tell about where a leak is by the relative loudness of the sound on adjacent services. If there are no services on the main, or for some reason the location of the leak cannot be determined as described above, a 1-inch earth auger is used to bore a hole down to the main itself. An aquaphone applied to rods in these holes will pin the leak down to a very small space. This method obviates digging numerous test holes in order to determine leak locations and has been used quite successfully in paved streets where the only opening in the pavement is that caused by driving a bull point through it. If the leakage is particularly difficult to locate, the main is cut in two and patent plugs similar to those used by plumbers in testing house drainage systems are installed in place of the pipe cut out. The water getting away in the section between the meter and the plug is then measured and in this way the section in which the leakage occurs is located. In cases where the valves are not located in such a way as to make it possible to isolate the section desired, the main is cut at the limits of the section to be paved and these plugs are used.

Analyzing the Results of the Tests

During the year 1921, 78½ miles of streets have been tested in this way and 1,091,000 gallons per day of leakage measured; 1,070,990 gallons per day, or 99 per cent of the total leakage, has been stopped. Of this amount, 92,000 gallons per day was stopped by abandoning the main. This main lay under the street car tracks in a down-town streeet, and because of dense traffic it was cheaper to lay new main. The remainder of the leakage was divided as follows:

	Gallons per Day
Service pipes	648,878
Joints	65,161
Hydrants and valves	259,751

The hydrant and valve leakage is excessive, because, in spite of ordinances to the contrary, hydrants are subjected to considerable abuse on account of being used by building, paving and sidewalk contractors and others for construction purposes. The service pipe leakage of 648,878 gallons per day, or 60 per cent of the total underground loss, was found to exist mostly in wiped joints. This figure on service pipe leakage is somewhat lower than it should be, because of the fact that, prior to making these tests, it is customary to cut off all wrought service pipes and replace them with lead service pipes. It is impossible to estimate how much additional leakage would have been measured had these rusted-out wrought pipes been included in the survey, but as most of these pipes are in bad condition, it is reasonable to suppose that this figure would be materially increased. It should also be borne in mind that this includes only that part of the service pipe leakage between the main and the roundway and that leakage in these pipes between the roundway and the premises is not included. In Chicago, wrought-pipe is often used by building contractors between the roundway and the house in the effort to keep first cost down, and experience has shown that these pipes have a very short life and are responsible for a great part of the underground losses.

From these figures, it can be seen that less than 7 per cent of the leakage is charged in any way to the main and none of this is due to leaks in the pipe itself. If the total leakage in these streets were reported in gallons per day per mile of pipe, it would be 14,000, whereas the actual leakage in the main itself was 830 gallons per day per mile of pipe, or less than is often specified for new pipe. For the entire period of five years, 350 miles of pipe have been tested, 7,038,000 gallons per day of leakage measured, and 6,510,000 gallons per day, or 93 per cent of leakage, stopped.

The oldest main tested since this system was adopted was a 12-inch cast iron main laid in State Street in 1852. This main is part of the first main laid in Chicago after the use of bored logs was discontinued. The section of this main tested was 1,500 feet long and was found to be absolutely tight. There were only three services off of this main and they were all cast iron. A 6-inch tap made for the purpose of connecting a hydrant to this pipe made it possible to inspect the interior as well as the exterior of the pipe, and there was very little evidence of corrosion. It is not known what the original thickness of this pipe was, but the thickness at present is greater than the present Class "C" pipe.

A scheme of reporting leakage in complete distribution systems better than now used, is not readily offered. At least this can be done—when leakage is reported as so many gallons per day per mile of pipe, it should be noted whether or not this includes leakage from services. The figures mentioned above indicate that it would be more fair to say the leakage in a distribution system is so many gallons per day per service than it is to say it is so many gallons per day per mile of pipe, as the services were shown to be responsible for ten times as much leakage as was the pipe.

Acknowledgment.—From a paper read at the American Water Works Association Convention, Philadelphia, May, 1922.

Infant Mortality Rates in Cities

It is a striking fact that the group of cities of over 250,000 have constantly maintained, as a group, a lower infant mortality rate than the smaller population groups. Many smaller cities pass them individually, but the fact remains, it is in the larger cities that the greatest efforts are being made to combat infant mortality and its chief and preventable cause—ignorance.

—Phillip Van Ingen, M.D., in *The Survey.*

Mosquito Control Through Lined Drains

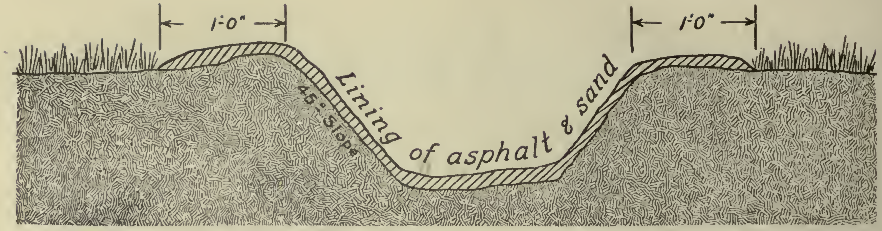
Use of Sand and Liquid Asphalt for Permanent Drains and Edges of Pools

IN a recently issued pamphlet, the Government Medical Officer of Health of Trinidad, British West Indies, has described an interesting and valuable method of mosquito control by the use of liquid asphalt and sanitary oil. This method was adopted in Trinidad after the usual methods of using drains to carry off the rainfall, of spraying pools with crude oil, and keeping the brush and grass cut within the area to be protected, proved inadequate. It was found that the ordinary drains were very expensive to keep clean and clear of grass, and the scouring action of the tropical rains soon eroded the bottom and sides of the drain, making them breeding-places for mosquitoes. It was further found that crude oil was not entirely satisfactory as a spray for pools, as the more volatile portions of the oil evaporated very quickly and the resulting film was soon broken up by wind or rainfall.

After repeated experiments, a satisfactory method was developed for lining the bottom and sides of the drain with a hard water-proof lining of asphalt and sand, which prevents the growth of grass or other vegetation in the drains and resists the scouring action of heavy rains. The principle involved in this method of lining drains is that a mixture of liquid asphalt and sand when heated to a high temperature and then allowed to cool will volatilize its lighter constituents, and the residue will be a hard asphalt-and-sand wearing surface. In practise, the heat is generated by burning the liquid asphalt and at the same time spraying sanitary oil on the blaze to provide the necessary heat required to volatilize the lighter constituents of the liquid asphalt.

SPREADING LIQUID ASPHALT IN DRAIN

BURNING LIQUID ASPHALT WITH SANITARY OIL SPRAY



CROSS-SECTION OF DRAIN AFTER LINING

Preparing the Drain for Lining

After the bottom and sides of the drain are cleaned and graded and all grass is cleared away for a distance of one foot on both edges of the drain, liquid asphalt is spread uniformly over the bottom and sides of the drain and for about one foot on each side, as shown in the diagram. The liquid asphalt should be applied at the rate of one gallon per square yard of drain surface and can best be spread by pouring from a hand-pouring pot provided with a special spout with an adjustable slit opening. Sand is then sifted over the surface of the liquid asphalt at the rate of 1 cubic foot for 8 square yards of surface. The liquid asphalt at once absorbs the sand. Fire is then started in the drain by means of a piece of oily waste or dry straw, and sanitary oil is sprayed on the fire by means of a hand pump spray, as shown in the larger illustration.

The fire soon spreads and ignites the liquid asphalt, which burns with an intense heat, the fire traveling along the drain with the wind. Where combustion is not complete, sanitary oil is sprayed on the flame to assist the combustion. In practise, 1 gallon of sanitary oil is used for 10 square yards of surface burned. On cooling, the drain is found to be lined with a hard, permanent asphalt-and-sand wearing surface about one-half inch in thickness, which adheres firmly to the underlying soil. This lining resists the scouring action of the flow of water in the drain and prevents the growth of vegetation.

The slide slopes of drains are made preferably with a 45-degree slope, but in firm clay formations, drains with nearly vertical sides have been successfully lined. In drains with steep side slopes, it is impossible to get a thick coating of liquid asphalt on the sides. Nevertheless, the intense heat generated in the drain has the effect of baking the clay to a degree of hardness which will resist scour and prevent the growth of vegetation.

Treatment of Pools

In treating pools that cannot be drained, the edges are burned and lined with asphalt and sand, as described for drains, and the surface of the pool is sprayed at intervals with sanitary oil. By the use of the methods explained above, mosquitoes have been exterminated from the Brighton Sanitary District, and the maintenance cost of upkeep of drains has been greatly reduced.

Limitations of Method

The work of lining drains as described must be done when the drain is dry. Drains in which water is flowing continuously throughout the year cannot be lined by this method unless the flow of water is temporarily diverted and the drain allowed to dry. Owing to the intense heat generated in lining drains, care should be exercised to insure that fire from the drains does not spread in dry grass or underbrush. On account of the fire hazard the lining of drains in towns and village streets cannot be undertaken by this method. In suburban and country districts, however, the lining of drains with liquid asphalt is particularly applicable and has proved effective and economical.

Only vigorous trees that will withstand the adverse conditions in the city should be planted on a street. The habit of growth should be suited to the width of the street, and the foilage should be of a pleasing texture.

Preparing Wells for Pneumatic Pumping

Three Methods for Use When Log of Well Is Unknown Described in Detail

IT is very rare for the pumping engineer to find a complete record or log of a well, even though wells are exceedingly important in a great many municipal water-works plants. The contract for driving a well seems to be let in a haphazard manner, with no record required from the drillers as to what class of material has been penetrated, where it was located, or its thickness, to say nothing of the size and kind of casing and strainers used. It is no uncommon thing to go into a well that has been represented to be of a certain size to the bottom and find that it has been reduced sometimes more than once. It entails considerable loss of time and expense to secure equipment that will go into such a hole. A driller should be required to furnish a complete log, which should be as carefully preserved as the deed to the property.

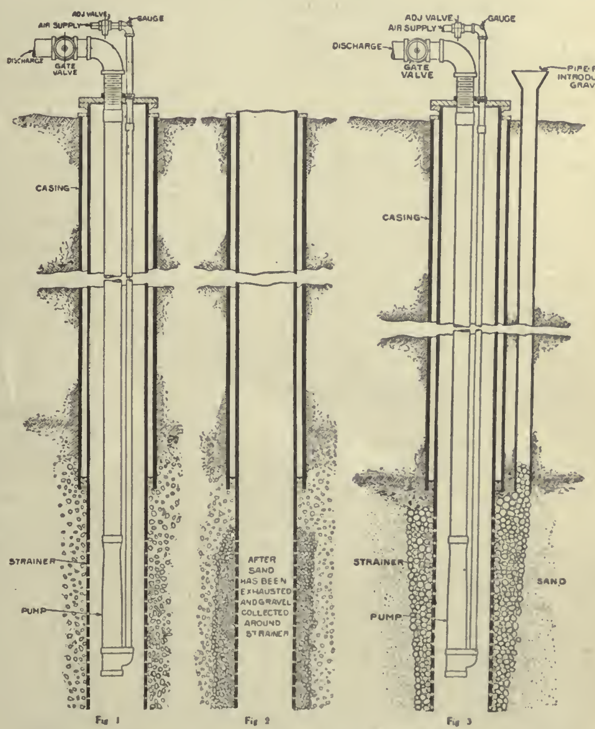
Constructing a Well in a Sand or a Sand-and-Gravel Formation

The standard practice of well drillers is to equip gravel and sand wells with a strainer, designed to shut out the sand from the working barrel of a deep-well pump. In time these strainers become clogged with sand, and the flow into the well is then reduced. By a system of back-blowing the output from such wells can be permanently increased.

The correct strainer for wells of this class, pumped by the air lift, is a perforated screen with openings of a suitable size to admit the fine material into the well, from which it can be pumped, and to hold back the coarser particles, so as to form a natural gravel filter bed outside of the artificial one.

The force available for getting water into a well is the head, due to the difference between the static level in the water strata outside the well and the pumping level in the well, minus friction due to the strata and screen. Therefore, the more this friction can be reduced, the greater will be the flow, providing, of course, that an abundance of water is available.

Back-blowing can be applied to all wells operated by air lift. The top of the well casing should be sealed, then, by closing the discharge pipe while the air lift is in operation, the air will be forced through the foot-piece and will drive the water ahead of it through the strainer and float the finer sand. Then, by opening the discharge, the flow will resume its course toward the surface and bring a portion of the floating sand with it. By a repetition



THREE METHODS OF INCREASING THE FLOW OF DEEP TUBE WELLS of this operation and by increasing the back pressure if necessary, practically all of the fine sand immediately outside of the strainer will be drawn into the well and discharged at the surface, and the coarser gravel will be collected outside of the screen in such quantities as to shut off the sand and increase the flow into the well without changing the piping in the well. This process may be repeated at any time, so that the screen and adjacent strata can be kept clear.

In Rock and Quicksand

When wells are drilled in rock, the action of the drilling tool forces the cuttings back into the crevices of the rock. These may be loosened and pumped out of the well in the same manner.

In the case of wells in fine material and quicksand, it is often possible to set a strainer in the sand and drill auxiliary holes alongside the well down to the top of the strainer. Then foreign gravel may be dropped down, which will roll in alongside the screen and take the place of the sand pumped out, often increasing the yield fourfold by affording outside of the gravel bed a larger area through which the water may leave the sand.

The illustrations on page 53 show wells constructed under the three conditions mentioned: First, a well with a properly constructed strainer for air lift work, placed in a mixed layer of sand and gravel. Second, showing the gravel collected around the strainer after the finer sand has been drawn into and pumped out of the well. It will be readily seen that this treatment forms a "gravel" strainer outside of the metal one and greatly increases the inflow area, keeps the openings of the screen full and open, and greatly increases the capacity of the well. Third, where the water-bearing layer consists of fine sand or quicksand, it is sometimes necessary to introduce gravel through one or more auxiliary holes drilled near the main well and terminating in the top of the sand layer, so that when the sand is removed by back-blowing, the gravel will roll in around the screen and form a gravel screen outside the metal one, as in the first instance. The gravel selected should be clean and practically round and of a size from that of a small walnut up to one which will pass through a 2-inch mesh.

Acknowledgment.—From a paper by John Oliphant, Chief Engineer, Pneumatic Pumping Department, Sullivan Machinery Company, Chicago, Ill., read at the American Water Works Association Convention, 1922.

City Transportation and the City Engineer

THE traffic on the highways of our cities has grown so rapidly in the past few years, especially since the advent of the automobile and motor truck, as to become a serious problem, claiming the earnest attention of the authorities. As our cities continue to grow, and as trade and business continues to be increasingly concentrated at one or more centers, the problem of transportation of all kinds through the city becomes more difficult. The economical administration of industry and the transaction of business in cities are dependent on the ease with which materials and merchandise may be moved, for modern business requires that transportation shall be by the most direct route and in the shortest time.

Inseparately interwoven into the street system and its functions are the facilities of transportation, whether they relate to the local movement within the city itself or to that wider movement through which the city maintains its contact with the world. Transportation is essentially a problem of planning constructive and administrative engineering with which the municipal engineer must keep in touch if his plans for city development are to function smoothly. Rapid and convenient urban and interurban service depends on the extent to which the system of main traffic streets has been planned to connect the important city centers by the most direct and adequate routes. The vigilance and persistence of the municipal engineer is necessary in securing the proper adjustments of both street and railroad grades and in preventing or avoiding the cutting off or abandonment of important streets in the construction of railroads and yards. In devising plans for getting rid of the grade crossings which are still a menace to life and property and an obstruction to traffic in many of our cities, he is the most important representative of the public.

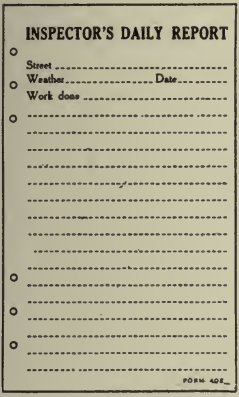
—"Municipal Engineering," George S. Webster, Trans. Am. Soc. C.E., 1921, page 516.

Asphalt Paving Inspection

By W. Earl Weller

City Engineer, Binghamton, N. Y.

ENGINEERS charged with the responsibility for the construction of public work many times find themselves unable. because of various inroads on their time, to visit the individual jobs as frequently as the work really requires. This means either neglect of the work or the installation of some system of "distant control," as an electrical engineer would term it. Fortunately, a very complete system of such control requires only a small expenditure of time, energy or money; in fact, a well-devised and strictly enforced system of "daily reports" properly used will satisfy all demands.

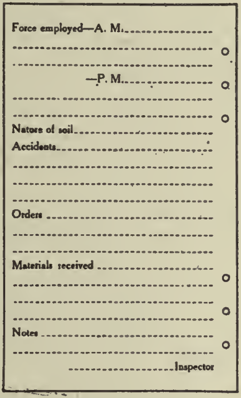


INSPECTOR'S DAILY REPORT

Street
Weather Date
Work done

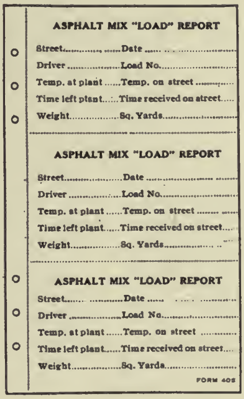
FORM 402

FIG. 1



Force employed—A. M.
—P. M.
Nature of soil
Accidents
Orders
Materials received
Notes
Inspector

FIG. 2



ASPHALT MIX "LOAD" REPORT

Street Date
Driver Load No.
Temp. at plant Temp. on street
Time left plant Time received on street
Weight Sq. Yards

ASPHALT MIX "LOAD" REPORT

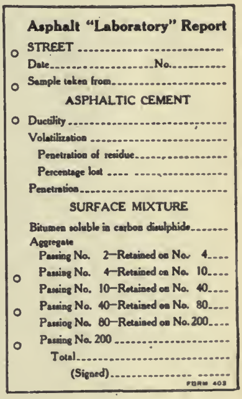
Street Date
Driver Load No.
Temp. at plant Temp. on street
Time left plant Time received on street
Weight Sq. Yards

ASPHALT MIX "LOAD" REPORT

Street Date
Driver Load No.
Temp. at plant Temp. on street
Time left plant Time received on street
Weight Sq. Yards

FORM 405

FIG. 3



Asphalt "Laboratory" Report

STREET
Date No.
Sample taken from

ASPHALTIC CEMENT

Ductility
Volatilization
Penetration of residue
Percentage lost
Penetration

SURFACE MIXTURE

Bitumen soluble in carbon disulphide
Aggregate
Passing No. 2—Retained on No. 4
Passing No. 4—Retained on No. 10
Passing No. 10—Retained on No. 40
Passing No. 40—Retained on No. 80
Passing No. 80—Retained on No. 200
Passing No. 200
Total
(Signed)

FORM 403

FIG. 4

FORMS USED BY INSPECTORS, BOTH ON THE STREET AND AT THE MIXER, AND THE LABORATORY REPORT FORM

The daily report has long been the ever-present help of engineers occupying executive positions in private corporations, but, unfortunately, the tendency in public work has been to dismiss the report as a useless bit of red tape. In reality, a system of daily reports has three distinct values:

First, the necessity of preparing a daily report that will be read has a decided effect in holding an inspector closer to his job.

Second, when the work is complete, the daily reports form an invaluable record of the job. The profession of contracting has its share of constituent members having such common human failings as inefficiency and dishonesty. Sooner or later every engineer will meet a contractor endowed with one or both of these failings. At such a time the record comes into its own and demonstrates its worth.

Third, daily reports, received and considered not later than the morning of the day following the one covered by the report, keep the engineer in touch with the work each day, no matter how the individual jobs may be scattered, thus making it possible for him to follow the progress of the work, to check the ability of his inspectors and to determine just where the time at his disposal for visiting the work shall be spent. This last is "distant control."

No type of construction work lends itself so readily to such control as the asphalt pavement, and municipal engineers who have spent weary hours either searching for or trying to develop capable asphalt inspectors will add, perhaps, that no type of construction work stands so much in need of such control. The Bureau of Engineering in Binghamton, N. Y., has used for the past three years a system of daily reports in connection with its construction work. These reports have amply proved their value in the light of actual use, and the following brief description of the system as applied to asphalt construction is offered in the hope that it may be of value to municipal engineers.

Whenever asphalt work is in progress in Binghamton, at least one inspector is on duty at the plant. This inspector is required to file a daily report including certain specific and certain general information regarding the day's run. For instance, he is required to take at hourly intervals the temperature of the asphaltic cement in the melting kettles and to note these temperatures in his report. He also notes on his initial report the mixing formula used by the contractor, and on subsequent reports indicates any change in this formula.

Two other items of specific information must be furnished by the plant inspector on each daily report—the total run of the plant in tons, and a statement of all materials received. He is at liberty, in fact is encouraged, to report any item of general interest in regard to the plant operation, such as the force employed, accidents to employees or to the plant, and general observations concerning operating efficiency. He must report back to the office on his daily report any orders which he may have received during the day. This feature of the report has been especially valuable both in fixing responsibility and in assuring the engineer in charge that his instructions are understood.

All this information is recorded on Form 402 (see Figs. 1 and 2). This report must be filed in the City Engineer's office not later than nine o'clock in the morning of the following day. In addition to the things the plant inspector must do in order to render a satisfactory report, he also takes samples of all materials received and makes such simple plant tests as may be required to keep the mix fairly uniform. At times it has been found advisable to have two inspectors at the plant, one spending all his time on the mixing platform. The samples taken by the inspector include a daily sample of the asphaltic cement taken the first thing each morning from the kettles.

Every load of "mix" leaving the plant must be accompanied by a consecutively numbered load report (see Fig. 3) signed by the plant inspector. These reports are made in triplicate by the inspector, who notes thereon the number, destination, temperature and weight of the load and the time it left the plant. One of these reports is given to the driver of the truck or wagon, the second is given to the plant foreman, and the third is retained by the inspector. When the load arrives on the street, the driver must deliver to the city inspector on the street his copy of the load report. The temperature of the mix is again taken, and if this temperature is satisfactory the load is dumped. The inspector then notes on the copy of the load report given him by the driver the temperature as determined on the street, the time the load was received, and roughly the number of square yards the load was made to cover. The plant inspector sends his copies of the load reports to the office with his daily reports, and the street inspector does the same with the copies that he has received from the drivers.

The street inspector is required to submit a daily report covering the work done, the force employed, and the materials received on the job. The work done must be so described that, should it be necessary, the work of any half-day can be located both on the street and in the plant reports. This result is obtained by describing the work by stations which have been chalked on the curb at regular and frequent intervals by the engineer in charge, and by designating by load numbers the mix used in each section. The street inspector is required to show on his report a fairly close estimate of the yardage of top placed during each half-day and to give, as in the case of the plant inspector, a brief synopsis of any and all orders that he may receive. He is also required to take at least two samples each day of the mixture as received on the street and to indicate very carefully the exact locations in the street and the numbers of the loads from which these samples were taken. The daily reports of the street inspector must be filed in the City Engineer's office not later than nine o'clock of the morning following the day covered by that report.

The samples of the asphaltic cement and of the surface mixture as taken by the inspector are delivered by the engineer in charge of the work to the City Chemist for analysis. These analyses are made immediately and the results reported to the City Engineer on the "Asphalt Laboratory Report" (see Fig. 4).

In the office the load reports from the plant are checked against the load reports from the street and then destroyed. The load reports from the street are then considered, temperatures being noted first. Any load leaving the plant too hot, or received on the street too cold, is listed for comment. The tonnage for the day is compiled next and checked against the daily report of the inspector at the plant. Any discrepancy calls for an explanation. The tonnage of mix used is then divided by the total yardage reported by the street inspector on his daily report. The result must at least be equal to a previously determined weight per square yard. A discrepancy in this results in a "riot call" for contractor, inspectors and engineer-in-charge and just must be explained or rectified. The recorded temperatures of the asphaltic cement are rapidly considered for any evidence of overheating, and the laboratory reports are checked over as to grading of mix and amount and quality of asphaltic cement. These things can all be done by the secretary if the City Engineer or the Deputy Engineer is busy, and only the variations noted. The remainder of the daily reports are read very carefully and any job that seems to need personal attention is visited during the afternoon.

All of the forms used for the above reports are uniform in size and as simple and convenient as possible. The uniformity of size is applied to specifications, extra work orders and extra work reports, thus making it possible for the inspector to keep all his data and reports between the covers of a single binder. All forms are made 3¾ x 6¾ inches in size—a real pocket size—and are punched for use in ring binders. Field reports are printed on pale blue, and laboratory reports on a light orange paper. When the job is complete, all daily reports, field notes, written orders, extra work reports, construction records and estimates, are bound together in an inexpensive binder and filed away to form the office history of the job. It is surprising how many times these "histories" are needed for reference.

Attention is called to the fact that the system above described is not academic, but rather is eminently practical, and that it has stood the test of three years' exacting use without any serious change in the system or in the forms. It is not to be understood that this system will supply ability that may be lacking in inspectors. No report can possibly tell how well the requirements of the specifications as to handling material or as to raking are carried out. The system will, however, from its very nature tend to increase the inspector's interest in, and application to, his job. It is sometimes objected that such a system requires too much time. This objection may be met with a flat denial. Finally, it must be noted that the ultimate success of the system depends upon the engineer himself. If the reports are dismissed with a careless, cursory glance, at least a third of the value of the system is absolutely wasted.

Reduce the Losses from Impact

WHAT we have learned in the last few years about the destructive effect of traffic impact and the resistance to impact offered by semi-flexible and flexible highway structures has a peculiar significance in the great economic problem of conserving our investment in old roads, particularly in gravel and macadam roads, when it becomes necessary to adopt a higher type of wearing surface. Prior to the careful investigation of this important subject, there existed a marked and growing tendency to discredit the use of old gravel and macadam roads as foundations for the higher types, in spite of the many remarkable service records of macadam foundations.

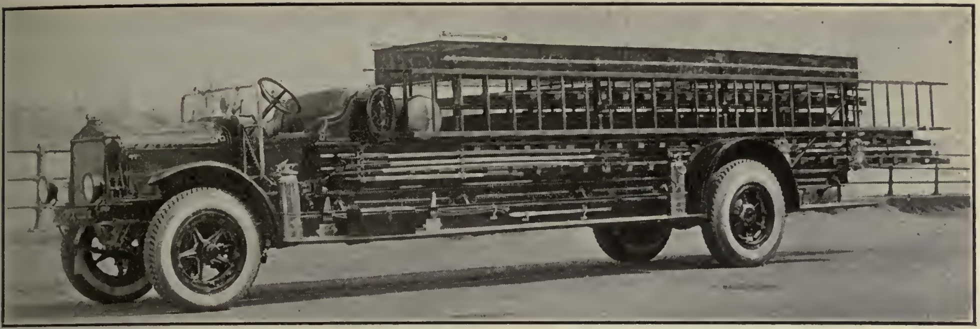
For example, in the city of New York, a number of the most heavily traveled streets were constructed years ago on macadam foundations and some are still giving satisfactory service. In 1890, Broadway between 59th and 79th Streets was paved with asphalt over an old macadam base, and for 22 years gave good service. Its replacement at the end of this period was largely due to subway excavations. Seventy-second Street, paved in a similar manner, also gave 22 years of service under increasingly severe traffic conditions, and the same is true for a 19-year period for Fifth Avenue between 110th and 120th Streets. Lenox Avenue between 110th and 124th Streets was surfaced with asphalt over an old macadam in 1904, and is still giving good service. The cost of maintaining this section in 1919, 14 years after construction, was only 1 per cent.

—Prevost Hubbard,
Chemical Engineer.

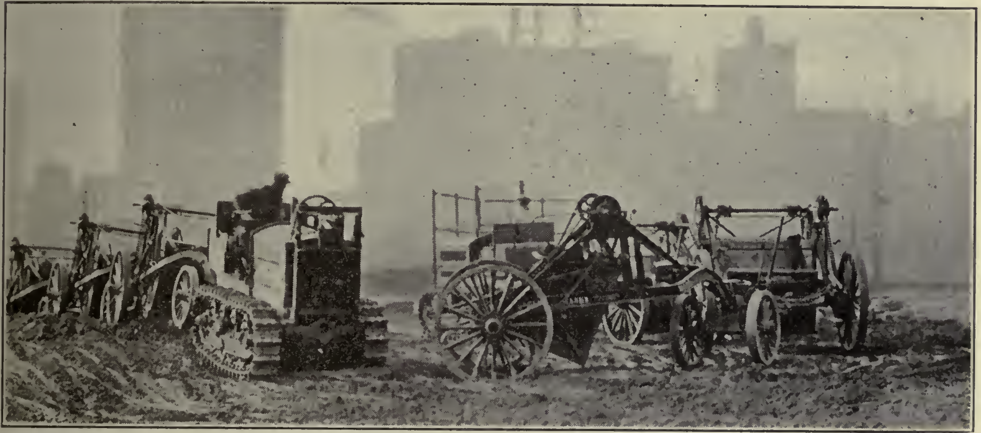
Municipal Departments Motorized for Greater Service

THE BOARD OF PARK COMMISSIONERS, MINNEAPOLIS, MINN., USED THIS BEST TRACKLAYER TRACTOR AND RUSSELL ELEVATING GRADER IN THE CONSTRUCTION OF VICTORY MEMORIAL DRIVE

TWO 2-INCH STREAMS FROM THE WATER-TOWERS, AND 1¾-INCH STREAMS FROM TURRET PIPES DELIVERED BY AMERICAN-LA FRANCE PUMPERS RECENTLY PURCHASED BY NEW ORLEANS, LA.

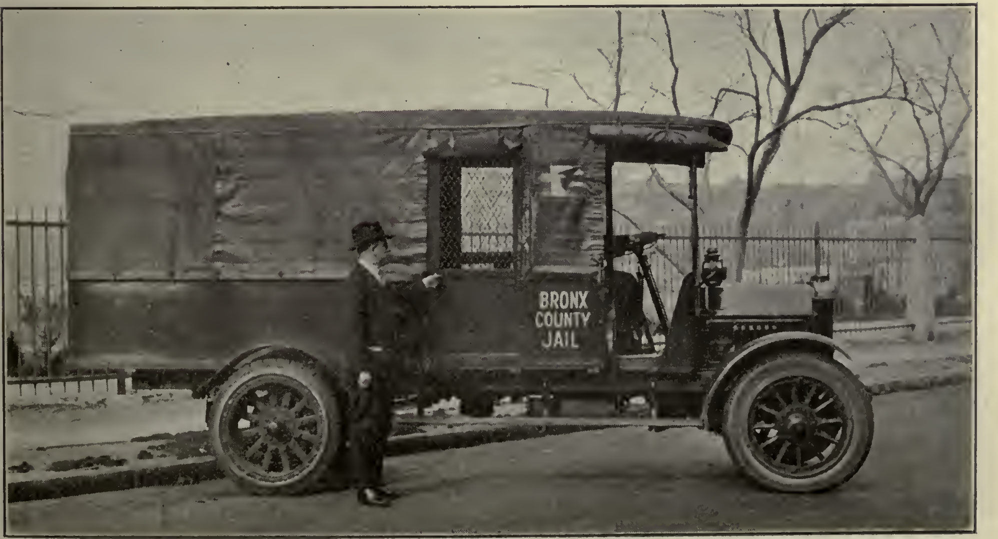


A WHITE HOOK AND LADDER IN SERVICE IN EASTHAMPTON, MASS.



TWO HOLT TRACTORS WITH BAKER-MANEY SCRAPERS OWNED BY THE SOUTH PARK COMMISSION, CHICAGO, ILL.

Last fall these outfits began the construction of a new municipal park and bathing beach



THIS "BLACK MARIA" MOUNTED ON A FEDERAL TRUCK BELONGS TO THE BRONX COUNTY, NEW YORK, JAIL

Chamber of Commerce Activities in Public Affairs

Poughkeepsie's Bus Terminal, Comfort Station and Parking Grounds

POUGHKEEPSIE, N. Y.—As the county-seat of Dutchess County, this city has long been the trade mecca of hundreds of shoppers from the rural districts and a favorite stopping-point for automobilists, for it is the largest city between New York and Albany and is located just midway between these cities.

With sixteen bus lines operating between Poughkeepsie and near-by towns, and with approximately two million tourists a year passing through, traffic conditions became a real problem. Because the Chamber of Commerce was vitally interested in solving all problems affecting the city at large, it was called upon to assist in remedying the situation.

Many of the large busses which made regular trips daily to various towns within a radius of 25 miles, received and discharged their passengers on busy street corners or in front of well-known stores. This not only blocked the streets, but prevented other automobilists from stopping in front of the mercantile establishments where they desired to shop. In addition, it was inconvenient for the passengers, as it necessitated their waiting outside on the streets in all kinds of weather.

To overcome these difficulties, the Chamber secured quarters in the heart of the city, two doors from Main Street and on the main highway between New York and Albany, and there opened a bus terminal and public comfort station. An attendant was placed in charge of the waiting-room to give out information, to receive parcels to be delivered to the bus lines, and to check suitcases and bundles. A comfort station was fully equipped with lavatories, 5-cent pay toilets, mirrors, running water, soap and towels. A freight platform was built directly outside of the waiting-room for larger packages, as no parcel larger than a suitcase is allowed in the waiting-room. A large parking lot for the exclusive use of busses was established next to the waiting-room. This lot is fenced in and is under proper protection, and all busses are required to park there when not actually receiving or discharging passengers. No

BUS TERMINAL AND PARKING PLACE ESTABLISHED BY THE CHAMBER OF COMMERCE, POUGHKEEPSIE, N. Y.

bus is allowed to park in front of the waiting-room until ten minutes before the scheduled starting-time. This convenience was taken advantage of by every bus driver, but in order to eliminate any possible return to the old street-corner parking, an ordinance was passed by the Common Council restricting the parking of cars. Bus drivers and patrons alike are enthusiastic in their praise of the conveniences thus afforded them by the Chamber of Commerce.

Another difficulty experienced was caused by the ever-increasing number of pleasure cars parked along the main thoroughfares and side streets. Some of these cars were parked for hours at a time while people were shopping or keeping other appointments. In order to relieve the streets of this crowded condition, the Chamber secured a vacant lot directly across from the bus parking ground and waiting-room. The Board of Public Works cooperated by having the space cleared, covered with ashes and rolled, and the Chamber secured an attendant to properly guard the cars parked there. Cars are checked as they enter, and the owner is given a corresponding number for identification. No charge is made for this service, but the attendant has the privilege of accepting gratuities.

With provision made for the proper parking of busses and pleasure-cars, facilities for the handling of freight and small packages, a waiting-room conveniently located, a comfort station modern and well-equipped, attendants courteous and always ready to give desired information, Poughkeepsie's welcome leaves a lasting impression that the city's interest in her visitors extends far beyond that of dollars and cents. Each visitor as he leaves for his home town has a satisfied feeling that in turn redounds to the benefit of the city in its industrial, mercantile and financial growth.

RALPH W. BUDD,
Secretary, Poughkeepsie Chamber of Commerce.

Fifth Annual Planting Day Celebrated

PROVIDENCE, R. I.—The Fifth Annual Planting Day conducted by the Providence Chamber of Commerce was successfully held Saturday, April 22. The exact number of plants actually sold under the auspices of the Chamber of Commerce and paid for by pupils in public schools and factory operatives was 31,114. The plants ordered in 1922 were as follows: Dorothy Perkins climbing rose-bushes, 13,122; Deutzia, 4,365; syringa, 5,167; Clematis, 3,290; weigela, 5,170. It is estimated that, in addition to the plants ordered through the Chamber of Commerce, 50,000 plants were placed in the ground at the homes of the many thousands of residents of the Providence-Pawtucket-Cranston-Central Falls-East Providence community as a result of the stimulus of the campaign conducted by the Civic Affairs Committee of the Providence Chamber. In evidence of this large demand, reports from various nurserymen might be cited, one of them being an order from a manufacturing establishment for over 4,000 plants.

All the previous planting-day campaigns conducted by the Chamber have been successful, and in each case the receipts have just about covered the expenses. Planting-day proclamations, in response to the request of the Chamber, were made and published by the mayors of Providence, Pawtucket, Cranston and Central Falls, and by the President of the Town Council of East Providence. A general circular was issued by the committee, and two sets of order blanks were printed, in different colors, one for individuals and one for schools, factories, etc. No individual orders were accepted by the Providence Chamber of Commerce, all such orders being required to go through the public school or factory channels, through which the delivery of plants was likewise made. In addition to the printed material mentioned above, the Chamber issued, with the cooperation of the Rhode Island State Board of Agriculture, a descriptive circular on how to plant shrubs.

Once in a while there have been reports of shrubs which failed to grow, but such reports have been so few as to count for nothing in comparison with the great favor with which the plan has been received each spring. We believe that chambers of commerce all over the country can with profit undertake such campaigns, for the cost is trifling and the pleasure derived therefrom is great and permanent. Beautifying the city with plants is not only good citizenship but good business.

CLARENCE A. COTTON,
Ex-Secretary, Chamber of Commerce.

Thirty-Six Feet of Injuries

Los Angeles, Calif.—Just what does "thirty-six feet of injuries" mean? Briefly, this: It means physical pain and suffering. It means a serious economic loss. It means that erstwhile happy homes are suddenly overshadowed by death. It means in many cases that someone has failed in his moral duty to so govern his actions that he may not jeopardize the happiness or lives of his fellow men. And it means that innocent dependents are suffering mental pain and actual physical distress.

The Los Angeles Chamber of Commerce, through its Department of Safety and Fire Prevention, is putting forth every endeavor which will tend to reduce injuries. Note the reference to "injuries" rather than to "accidents"; this for the reason that it is not believed, notwithstanding the age-old adage, "Accidents will happen," that the word "accident" can be properly applied in this connection. Webster says under "accident"—"an event which is unexpected," or "the cause of which was unforeseen." Is the cause "unforeseen" when one operates a car without proper brakes or without adequate anti-skid devices when driving on wet pavements, or when one drives at a speed not consistent with safety? Is the cause "unforeseen" when one operates a machine in an industrial establishment without such machine's being properly guarded, or when one has failed to observe the safety precautions inaugurated for his protection? The consequences of such are not properly called "accidents." Therefore, the statement is repeated that our efforts are directed towards the reduction of "injuries."

THIRTY-SIX FEET OF NEWSPAPER CLIPPINGS RECORDING ACCIDENTS IN LOS ANGELES

This is being done through lectures given in the Chamber of Commerce auditorium and elsewhere, and through personal talks to workmen in industrial plants. Bulletin boards are supplied to such plants as well as to garages and gasoline stations, and bulletins, also supplied by the Chamber of Commerce, are posted on the boards at frequent intervals. Safety committees are organized in industrial plants. Lessons on safety are supplied to superintendents and foremen of such plants. Safety lessons for automobile drivers are furnished to all who are interested. Personal inspections are made of business houses, industrial plants, garages, etc., with a view to the elimination of any existing fire or accident hazards. Cards, leaflets and booklets giving safety hints, traffic rules, etc., are distributed by mail, through information bureaus, and through the management of industrial plants, business houses, schools and clubs.

In fact, every possible channel which will serve in the dissemination of a safety thought or action is brought into use. From the results thus far attained, as evidenced by reports from those whom we have been privileged to serve, the effort has proved worth while, and we are certain that the cumulative effect will mean a continued improvement; but a glance at the daily papers brings to us a realization of the fact that there is still a tremendous amount of work to be done in the field of safety, that we may not suffer the consequences of our own or another's carelessness.

JOHN D. MAXFIELD,
Manager, Department of Safety and Fire Prevention, Los Angeles Chamber of Commerce.

Chamber Secures Reduction in Building Costs

TRINIDAD, COLO.—Substantial reductions in building material prices, as well as in the wages demanded by carpenters, plumbers and steamfitters, and electricians were recently secured for Trinidad by the effective work of the Board of Directors of the Trinidad-Las Animas County Chamber of Commerce. The Board made a thorough investigation of Trinidad building costs as compared with material and labor costs in other Colorado cities, and held a series of conferences with the various groups concerned. A spirit of frank open-mindedness characterized these conferences, and a sincere effort was made to arrive at a basis that would be fair to all parties. The findings and results of the investigations were made public through the local press, which gave excellent support at all stages.

Simultaneously with the publication of the final report of the Board of Directors, the Chamber of Commerce announced in post-card form the following creditable list of improvements and construction activities under way:

$150,000	High School gymnasium and auditorium
$200,000	New residences
$522,000	Street paving contracts
$100,000	Gas company improvements
$85,000	New Catholic school
$50,000	New Christian church
$60,000	City of Trinidad

Are we not entitled to be mussed up a bit? Trinidad apologizes for her appearance now, but please come back soon and see our new city.

WILLIAM E. INGLIS,
Secretary, Trinidad-Las Animas County Chamber of Commerce.

Finding Out Where Candidates Stand

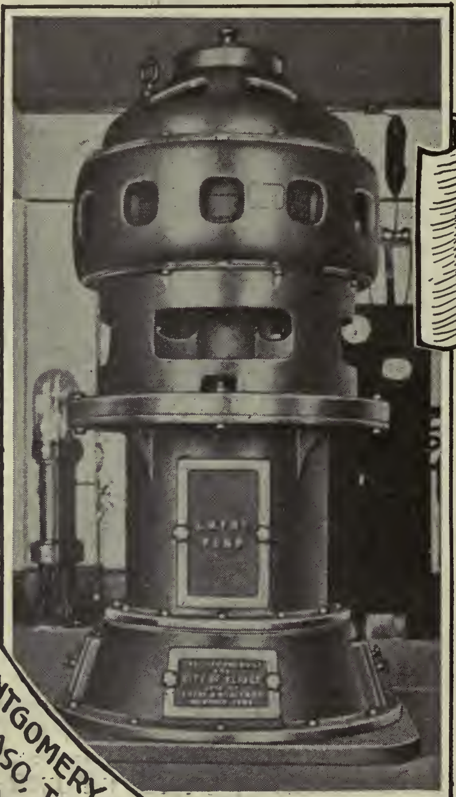
PITTSBURGH, PA.—For some years it has been the custom of the Allied Boards of Trade of Allegheny County, Pa., to send a questionnaire to all the candidates for local offices, such as mayor, council, etc., as well as to candidates for the Legislature. These questionnaires contain epitomes of the various progressive measures which are desired and which are being promoted by the local civic bodies holding membership in the Allied Boards of Trade. It is an effective method of bringing these matters before the prospective mayor, councilmen, legislators, etc., at the proper time, from a psychological standpoint, to secure their most favorable consideration. Of course, the "standpatter" and reactionary candidates do not respond, but the progressive, civic-minded candidates are glad of such an opportunity to express themselves and to secure the publicity which is given to their replies.

At the recent primaries held on May 16, fifty-two candidates for the State Senate and the House of Representatives replied to the questions sent out by our committee. The questionnaire contained a number of home rule amendments to the present laws; it asked for support for the Pittsburgh Graded Tax Law, by which buildings in Pittsburgh are now assessed 60 per cent of the amount assessed on the land, and the extension of this law so as to exempt all buildings from taxation; the city manager plan and election of council by proportional representation; certain election reforms, including the adoption of voting machines; and one assessing board for city and county. The replies were published in the daily papers and printed in the monthly report which is distributed through the various civic bodies.

The election of the members of the Legislature has been heretofore largely under the control of the machine politicians, but this year quite a number of the candidates elected are favorable to the program of the Allied Boards of Trade.

J. RALPH PARK,
Executive Secretary, Allied Boards of Trade of Allegheny County, Pa.

A DEEP WELL PUMP



AND A FEW OF ITS USERS

MONTGOMERY, ALABAMA
EL PASO, TEXAS
PORTSMOUTH, N.H.
JAMAICA, L.I.

SAVANNAH, GEORGIA
CHICAGO HEIGHTS, ILLINOIS
PENSACOLA, FLORIDA
GALVESTON, TEXAS

SIZES

Layne Turbine Pumps, built in sizes to deliver from 200 to 5,000 gallons per minute, are installed directly in wells, compartments or shafts, ten inches in diameter and larger.

LIFT

Layne Turbine Pumps lift water from 10 feet to 1,000 feet in depth, delivering it to elevated tanks or to pipe lines under pressure.

WORKING PARTS

There are only two mechanical working parts, the drive shaft to which the impellers are attached and the thrust bearing in the head, from which the operating shaft is supported. Both parts operate in a bath of oil. Perfect alignment is insured through suspension of the rotating shaft from the top on a self-aligning bearing. The entire pump hangs from the surface of the ground, with no bracing or struts required below the surface.

MAINTENANCE

There is one permanent adjustment which is made at the time of installation. It is not necessary to adjust the pump thereafter. It is practically noiseless in operation with automatic lubrication and only one simple packing gland which is located above ground. There are no valves to look after and it is not necessary to prime the pump.

Literature will be sent to municipal officials and others interested free on request.

LAYNE & BOWLER CO.
MEMPHIS, TENN.

Overhauling the School System

SAN FRANCISCO, CALIF.—Several years ago the public school situation in San Francisco was a subject of serious criticism on the part of various groups, including the Municipal Affairs Committee of the Chamber of Commerce, and the Collegiate Alumnae Association of California. In view of these criticisms, the Chamber of Commerce was instrumental in bringing together a few representative groups of men and women interested in education, including leaders in commercial organizations, labor unions and women's clubs.

This group made a hasty study of the local situation and determined that it would be advisable to have a survey made by a recognized and competent outside authority, and we undertook to secure the services of some national body. We subsequently sent the Vice-President and General Manager of the Chamber east, with the result that after conferences with several organizations and individuals the United States Department of Education agreed to make such a survey if invited to do so by the San Francisco Board of Education.

In cooperation with the others interested, we then took the matter up with our Board of Education, and after satisfying it that there was no feeling of criticism, and that the sole interest was to secure from the best possible sources a complete study of our school department and the system under which it operates, and recommendations for the betterment of our educational system, the Board formally invited the Department to make the study.

The San Francisco Educational Society was then organized, consisting of the original groups and some additional men and women. A fund of $8,500 to cover the cost of the survey was raised and deposited with the Chamber of Commerce as Trustee and was used to cover the costs of the study.

The actual survey was made under the personal direction of Philander P. Claxton, Commissioner, Bureau of Education of the United States, and was most comprehensive. Each of the experts working under Dr. Claxton studied his particular problem as it existed in the local school system and submitted the results of the survey together with the recommendations for the correction of existing evils.

The results of the entire survey proved conclusively that the public school system in San Francisco was wrong basically. The difficulty lay in the very heart of the system—in the Administrative Board. The city charter at that time provided that the people elect every four years a Superintendent of Schools, who was under the control of the Board of Education, composed of five members, four appointed by the Mayor and the County Superintendent of Schools; the latter was ex-officio a member of the city Board on an equal footing with the appointed members. The Board was divided into committees, each having the right to take the initiative and make recommendations for immediate action on questions not previously considered. To all their rulings, the Superintendent was subordinate. The Board members received a yearly retaining fee of $3,000 each and gave all their time to the schools. They were virtually the body of technical experts for the performance of duties which in other cities were assigned to the superintendent of schools and his assistants.

The recommendations of the United States Bureau of Education called for a definite reversal of this system of authority. It recommended the amendment of the city charter in such a way as to provide for the creation of a Board of Education which should serve without pay; be independent of all other branches of city government; have power to appoint a Superintendent of Schools and to confirm or reject the Superintendent's nominations of all deputy or assistant superintendents, directors of special departments, supervisors, principals, teachers and such other officers and employees as may be provided by the charter or by action of the Board; and which should have full control and management, through its Superintendent of Schools and his assistants, of all matters relating to the public school affairs of the city, whether in the educational, the business, or the financial departments of the school system.

This recommendation has been very closely followed in the revision of the San Francisco schools system. The present system calls for a Board of Education composed of seven members, for whose combined compensation $5,000 annually is provided. This Board appoints the Superin-

Health Hints for Public Places

The Commissioner of Health in every community knows the necessity of safeguarding the public health in every possible way. He knows the value of modern sanitary appliances, such as

Mueller Sanitary Drinking Fountains

Artistically designed, upon correct scientific principles, these Sanitary Fountains are ruggedly built and require practically no attention after installation.

No. E-3650, patented, Double Head Pedestal is one of several attractive *MUELLER* Fountains, descriptions and prices of which will be sent on request.

H. MUELLER MFG. COMPANY, DECATUR, ILL. PHONE BELL 153

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New York City, 145 W. 30th St., Phone Watkins 5397 San Francisco, 635 Mission St., Phone Sutter 3577
Sarnia, Ontario, Canada

Mueller Metals Co., Port Huron, Mich., Makers of "Red Tip" Brass Rod; Brass and Copper Tubing; Forgings and Castings in Brass, Bronze and Aluminum; Die Castings in White Metal and Aluminum; also Screw Machined Products tendent of Schools and approves the appointment of his assistants. The Board is divided into five standing committees: Finance, Supply, Building, Text, Personnel.

The position of the Board of Education is that of a board of directors in a corporation, and the Superintendent and his assistants act as a staff of technical experts executing and managing the system and being responsible to the Board of Education.

The present plan has been effective in creating straight-line authority which has assisted greatly in the work and has improved the spirit of the entire department.

Another recommendation embraced the redivision of grades among the grammar, intermediate and high schools. This recommendation was modified to include a 6-3-3 plan whereby the grade school contained 6 grades; the Junior High School, 3 grades, and the High School, 3 grades.

Following the suggestion of the survey, classes in sight saving and Americanization, evening schools, extension courses, day schools for adults, vocational, juvenile court and parental schools have been started. The survey recommended consolidation of all school activities of the Board of Health and of the Playground Commission under the Board of Education. This plan has not been entirely carried out, because it was considered inadvisable to do away with the Playground Commission altogether. Measures of a health corrective nature in the schools, however, are instituted only by the Board of Education, with serious consideration of recommendations of the Board of Health. This cooperative plan has proved very satisfactory. A group plan is now under consideration for the creation of a group in which special coaching teachers will be provided for the backward children who are retarding their fellows.

The survey also recommended that the charter be amended to give the Board of Education entire control and management of its building affairs. At present the Board of Education formulates and provides all building policies, but these are executed by the Board of Public Works. No serious evil is found in this combination.

The Board makes its own budget, but does not determine the amount of tax levy for this expense, as was recommended by the Bureau of Education. Plans are now under way for the creation of a new office carrying the title of Business Manager, or similar name, which will have charge of the auditing and accounting.

The survey recommended five deputy superintendents. Six are now elected each year by the Board. The entire teaching staff is chosen only on the recommendation of the Superintendent. The offices of janitor and mechanical servants are subject to the civil service regulations. The Board holds meetings twice a month on the first and third Tuesdays. On the second and fourth Tuesdays a conference of the Board is also held. The minutes of the meetings are not printed, as suggested, on account of a lack of money. The Board of Education hears the case of any dismissed member of the staff and is the final tribunal. A system of efficiency ratings has been formulated to keep a closer check upon the staff.

The Board of Education, the Chamber of Commerce, and other civic organizations feel that a very great improvement has been made by the formulation and adoption of the recommendations of the Bureau of Education.

A. DE WITLOOK,
Director, Research Department, San Francisco Chamber of Commerce.

Clean-up Prizes for School Children

BURLINGTON, N. J.—The aid of the school children was enlisted in the educational campaign which preceded Burlington's Clean-up Week. The Chamber offered prizes to the school child writing the best essay on "Why Burlington Should Have a Clean-up Week Campaign," and the child designing the best poster for such a campaign. The week began with a parade of the school children on Monday at noon. A prize was offered to the class presenting the most comprehensive example of a clean-up campaign. Nineteen classes competed and showed such interest that a prize was awarded to each class. The Scouts were also enlisted. The city was divided into seven districts, each in charge of a troop of Boy Scouts, and a prize was given to the troop having the cleanest district at the end of the week. Splendid cooperation was secured from the daily newspaper, which carried a front-page double-column head every day of the week.

P. J. PERINCHIEF,
Secretary, Chamber of Commerce.

A prominent engineer writes:

"Your 'Maintenance Manual' is the most constructive piece of road literature that has come to my attention in years. Congratulations."

A Road Maintenance Manual Every Engineer Should Have

ROAD authorities know that eternal maintenance is the price of good roads; that haphazard patching and treating of highways is more costly in the long run than a system of regular upkeep.

This manual shows how every type of road and pavement, except earth roads, can be easily repaired and maintained with Tarvia.

Whether or not you use Tarvia, this booklet will prove of great benefit to you in your work. "Road maintenance with Tarvia" is recognized by engineers and road authorities as the most complete and helpful booklet on road maintenance that has ever been published.

A copy will be gladly sent free on request to our nearest branch office. As the number of copies is limited, we suggest that you write for your copy today.

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THE BARRETT COMPANY, Limited: Montreal Toronto Winnipeg Vancouver St. John, N. B. Halifax, N. S.

Improving the Municipal Light and Power Plant of Brookings, South Dakota

This Town of 4,000 Operates Its Own Electric Light, Power, Heat, Water and Telephone Systems

By W. F. Schaphorst, M. E.

THE city of Brookings, S. Dak., located close to the Minnesota and South Dakota border line, midway between the northern and southern extremities of the state, has a population of only 3,924 according to the 1920 census. During 1919 and 1920, when prices were at their maximum, the city laid nearly five miles of concrete paving at a cost of approximately a half-million dollars. A $400,000 school building was also erected. Early in 1921, a special election was called to vote a bond issue of $60,000 for the improvement of the municipal power plant, which had become inadequate and was continually overloaded. The plant had failed to keep step with the growth of the city and the demand for more light and heat for business and domestic purposes.

EXTERIOR OF THE BROOKINGS, S. DAK., MUNICIPAL POWER PLANT

Despite the fact that prices on power-plant machinery had not dropped to any considerable extent, the bond issue was approved. In announcing the bond issue it was made plain that a large part of the wastage of coal at the plant was due to worn-out boilers, overloaded engines and out-of-date equipment. Figures were shown to demonstrate that the new equipment would pay for itself in a very short time and that lower rates for light, heat and power could be made possible by installing new machinery which would increase the efficiency of the entire power plant.

The power plant, prior to its rehabilitation, consisted of one 150-kilowatt generating unit driven by a Corliss engine at a speed of 100 r. p. m. This unit has been running constantly for 21 years and is still used occasionally. Eight years ago a 200-kilowatt direct-connected unit was installed, which is driven by a four-valve non-re-

Three story wood school building at Arcade, N. Y. Heated by waste steam from the town's electric light plant.

The daily press tells us repeatedly of hazardous school fires from forced heating systems.

Remove All Fires from School Buildings — Use Community Heating

THIS school building had six separate furnace fires in the basement and the top floor could not be occupied due to existing fire hazards.

Now there are no fires in the building and the top floor is safely used. Heat is supplied by exhaust steam piped through an underground main from the municipal power and lighting plant. The old radiation and piping were used.

Steam, easily regulated as required, is now charged for by meter in same way as gas or water.

This is but one instance where a school house was made safe. During the past forty years we have designed and installed Adsco Community Heating Systems in more than 400 towns, institutions, industrial plants, groups of residences, also groups of city office buildings. Steam for heating is supplied from Central Station Plants, either new or old, and is piped to the various buildings through underground mains. The success of these systems has been largely dependent on the specialties and insulations we have perfected to prevent leakage and waste.

Write for complete information regarding cost, operation and profits of Adsco Community Heating.

Ask for Bulletin No. 20-AC on "Adsco Community Heating." Bulletin No. 158-AC describes "Adsco Heating," the One Valve System, for individual buildings. Name of your architect appreciated. Architects, engineers, and heating dealers also write for Bulletin No. 159-AC.

Adsco Graduated Radiator Valve gives positive control.

AMERICAN DISTRICT STEAM COMPANY

GENERAL OFFICES AND WORKS

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ADSCO HEATING

leasing Corliss engine at a speed of 200 r. p. m. Four fire-tube boilers sonstitutes the equipment of the boiler room.

A well-qualified consulting engineer made an examination of the chimney, which had been declared in very poor condition, and stated that with a few metal bands it could be made safe and sound and that it was amply large to meet the demands, not only of the present plant, but of the plant as enlarged. He found that a new unit could be installed, with other more efficient equipment to bring the capacity of the plant high enough to take care of the needs of the city for many years, for approximately $60,000. He criticized the plant with the remark that it was conspicuous for its lack of measuring equipment with which to ascertain just what the plant was doing, wherein it was wasteful, or in what way it was efficient.

Boiler-Room Facts

In the boiler room, two of the four fire tube boilers have been removed and a 500-horse-power Stirling water tube boiler installed. While the Stirling boiler was being installed it was impossible to operate continuously with the two remaining boilers, which had to be shut down every Sunday afternoon in order to give them a thorough washing out.

An interesting, though not uncommon, misunderstanding regarding the elimination of smoke was well demonstrated in Brookings. Many laymen and newspapers often speak of "a smoke-consuming device" as though it were a machine. There is no such thing as a smoke-consuming machine. The best way to prevent smoke is to properly construct the furnace and admit air in the correct places and in the correct amounts. In the Brookings plant an inferior grade of fuel is used under the boiler. This fuel is Franklin County, Ill., screenings, 1½-inch size. The intermingling air under such conditions must be sufficiently heated so that it will ignite the volatile gases and unite with them. To do this properly, ample space and ample time for complete combustion are required. Unless the temperature is high enough and the volume and time element ample, the gases will strike the comparatively cold boiler-heating surfaces, will cool off, and will pass up the chimney without burning.

To insure complete combustion, fire brick arches are now commonly used with good results, and are particularly valuable where bituminous and low-grade volatile coals are used. With a good fire brick arch, it is possible to heat the air to a higher temperature than without the arch.

The selection of a good fire brick arch for use in the Brookings plant should have been given serious thought, because unless the layers of fire brick are thick enough, or there are a sufficient number of layers of brick, it is necessary to replace the arch very frequently. An arch was installed, but it was of the circular type rather than of the flat type. The circular arch is cheaper but less effective. By using a double suspension arch, a reserve arch or emergency arch is obtained; this permits using up one hundred per cent of the main arch next to the fire and a considerable portion of the reserve arch until it is convenient to shut down for repairs. The reserve arch also acts as an insulator to the framework, securely protecting it from the intense heat. Crystallizing or sagging of the supporting iron work does not occur under proper conditions. The Liptak Fire Brick Arch Company, of Minneapolis, Minn., which specializes in fire brick arches and in fire brick work in general, supplied the arch and did the bricking-in for the Brookings plant.

The new direct-connected Corliss engine, operating at 150 r. p. m., was purchased from the Murray Iron Works, Burlington, Iowa. This engine now drives a 500-kilowatt General Electric generator. The new unit has been installed so that it can be operated in parallel with the old and gives the plant a capacity of 800 kilowatts when running at full capacity, in place of the former 280 kilowatts. Throughout the plant provision has been made wherever possible for additional units or equipment to be added as increase in the capacity may require. The boiler feed water is softened by the Refinite method.

The cost of coal per ton last winter rose to $9 delivered to the power station. This cost could be considerably reduced by building a side track from the railroad about two blocks distant or by installing a coal conveyor system. Such a siding or conveyor system should pay for itself in a short time by reducing coal-handling costs. The plant uses from 13 to 25 tons of coal per day. In feeding coal to the boilers, it must first be shoveled into the stoker hop-

There Is No Substitute for "Caterpillar"* Construction

The "Caterpillar's" field of usefulness is by no means limited to road making. There is a Caterpillar"* of size and capacity for every power need. On farm or ranch, in the mining, oil and lumber industries, for snow removal and other civic work—wherever power and endurance are at a premium, the "Caterpillar"* has no real competitor.*

Just as Holt has pioneered in the invention and practical application of the features of construction which give the "Caterpillar"* its unmistakable leadership, so Holt has pioneered in their perfection. Our engineers, through constant study of the road-maker's needs have made the "Caterpillar"* unrivaled for ease of control, dependability of performance and low cost of upkeep. On road-making and hauling projects of every kind "Caterpillars"* will be found doing the work *better and cheaper* than any other method or machine. On request we will arrange to show you motion pictures of "Caterpillars"* in action on jobs like yours, or send our new booklet, "Caterpillar Performance."

** There is but one "Caterpillar"—Holt builds it. The name was originated by this Company, and is our exclusive trade-mark registered in the U. S. Patent Office and in practically every country of the world.*

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pers. It is intended, later on, to construct storage bunkers overhead, from which coal will be fed by gravity in the ordinary manner. A type "E" double retort underfeed stoker has been installed and works very well with the Stirling boiler.

A Clarage fan is used, driven by a belted vertical 300 r. p. m. Troy engine for mechanical draft. Similar combinations are frequently used where a poor grade of coal is burned, requiring a comparatively high air pressure. This probably could have been improved upon by the installation of a screw blade propeller blower delivering air parallel to the shaft's axis. The stoker, forced draft fan and damper are controlled by means of a damper regulator. Mechanical regulation of this sort is almost invariably superior to manual regulation.

Selling Electric Power

The city of Brookings is furnishing light and power within its corporate limits and is extending its distribution lines to a number of smaller towns in South Dakota. A contract has already been signed with Volga, to receive 24-hour service from the Brookings plant for a period of five years. The current is delivered to the city limits, where Volga takes it over the city's own transmission lines and distributes it to consumers. The current is sold to Volga at the flat wholesale rate of 7 cents per kilowatt hour at the Brookings switchboard.

The Municipal Heating System

Exhaust steam from the engine has been used for a number of years for heating business buildings on Main Street, for heating the municipally owned buildings, such as the city hall and school buildings, the public library, and the new school building which was in process of erection when this was written.

Until a short time ago steam condensate meters had not been installed, heat having always been furnished on a flat wall area basis. This method was a thorn in the flesh of many of the Brookings people, who believed that the city was losing money because of its loose methods. It is true that some users of city heat were unnecessarily careless in leaving windows open during cold weather. Meters have corrected that evil. Sometimes, during extremely cold weather when the thermometer occasionally drops to 40 below zero, live steam is furnished for heating, which is permissible provided it is practiced only during very cold weather. Some of the taxpayers of Brookings have protested against the use of live steam in the heating mains, but it is easy to show that such protests are in error, as long as the use of live steam is not overdone.

The Municipal Water-Supply

For the municipal water-supply a well was dug about 20 years ago, 1¼ miles west of Brookings, and a small cover built over it. An internal combustion engine was first used for pumping, but this was later replaced by a 20-horse-power electric motor. The water is pumped into a 100,000-gallon tank located on an elevation in East Brookings. The water pressure throughout the city averages about 70 pounds per square inch. During 1920 the water department operated at a loss of $565.87. There are about 900 water consumers in the city. Water is charged for at the rate of 25 cents per thousand gallons. A minimum charge of 75 cents per month is made, permitting the user to have 24,000 gallons per year. If more than that amount is used, he pays for it at the standard rate of 25 cents per 1,000 gallons.

The Telephone System

The city of Brookings is almost unique in operating its own telephone system. It is actually making money at the following rates, which are for unlimited service. There are over 1,000 telephones in the city.

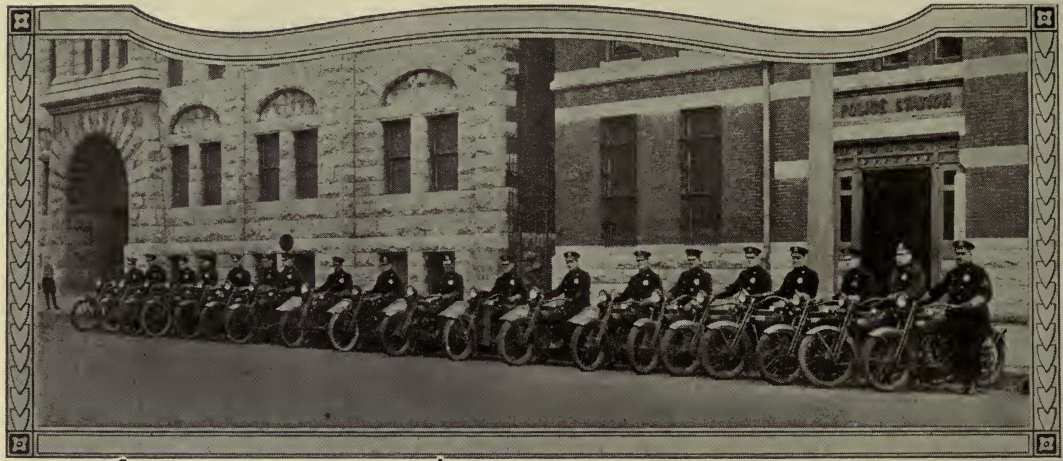
MONTHLY RATES IN ADVANCE FOR TELEPHONE SERVICE WITHIN CITY LIMITS

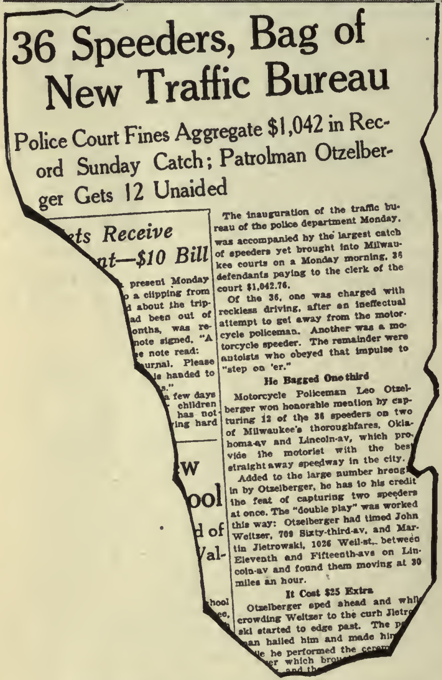
Business use	$2.50
Extension	1.00
Two-party, selective ringing, each	2.00
Two-party, same phone, each	1.75
Residence, single line	1.50
Four-party, selective, each	1.00
Extension, each	.50
Extension, bell, each	.25
Desk phone, extra	.25

Reduction in Rates

Only recently, rates for electric current and for heat have been reduced. The old rates for lighting were 15 cents per kilowatt for the first 100 kilowatts and 12½ cents per kilowatt thereafter. This has been reduced to 12½ cents for the first 100 and 10 cents for each kilowatt thereafter. The old power rate was 10 cents and 6 cents on the basis of 100 kilowatts and over. This has been reduced to 8 cents and 5½ cents.

The rate for steam heat has been reduced from $1.10 per 1,000 pounds of condensate to $1.





36 Speeders, Bag of New Traffic Bureau

Police Court Fines Aggregate $1,042 in Record Sunday Catch; Patrolman Otzelberger Gets 12 Unaided

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The inauguration of the traffic bureau of the police department Monday, was accompanied by the largest catch of speeders yet brought into Milwaukee courts on a Monday morning, 36 defendants paying to the clerk of the court $1,042.76.

Of the 36, one was charged with reckless driving, after an ineffectual attempt to get away from the motorcycle policeman. Another was a motorcycle speeder. The remainder were autoists who obeyed that impulse to "step on 'er."

He Bagged One third

Motorcycle Policeman Leo Otzelberger won honorable mention by capturing 12 of the 36 speeders on two of Milwaukee's thoroughfares, Oklahoma-av and Lincoln-av, which provide the motorist with the best straight away speedway in the city.

Added to the large number broug
in by Otzelberger, he has to his credit the feat of capturing two speeders at once. The "double play" was worked this way: Otzelberger had timed John Weltzer, 709 Sixty-third-av, and Martin Jietrowski, 1026 Weil-st., between Eleventh and Fifteenth-avs on Lincoln-av and found them moving at 30 miles an hour.

It Cost $25 Extra

Otzelberger sped ahead and whi
crowding Weltzer to the curb Jietro
ski started to edge past. The p
an hailed him and made hi
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Ask your local dealer for free demonstration of the Harley-Davidson. Or write us for special, illustrated literature which shows how several cities—large and small—use "America's Police Motorcycle." No obligation to you.

A Good Day's Work

NOT bad for one Sunday's work—36 arrests for speeding and reckless driving—$1,042.00 in fines paid to the city of Milwaukee!

Milwaukee's police department and citizens swear by the Harley-Davidson. And crooks and law breakers give the city a wide berth. Mounted officers—riding regular "beats" all over the city—have given Milwaukee the reputation of being one of the most orderly cities in the country.

Over 900 cities and counties now use Harley-Davidsons for police work. They have all found that a motorcycle soon pays for itself, and thereafter earns the city a good profit for years. The low upkeep (average, 50 miles for a dollar—gas, oil, tires and all) and the wonderful durability of the Harley-Davidson are features that appeal particularly to city officials and taxpayers.

HARLEY-DAVIDSON MOTOR CO.
MILWAUKEE, WISCONSIN

Harley-Davidson

World's Champion Motorcycle

Municipal Finance

BONDING **ACCOUNTING** **TAXATION**

Seattle Takes Exception to Census Bureau Data

To the Editor of The American City:

In your issue for April, 1922, you have an article entitled, "Is Your City Living Within Its Income?" The table accompanying this article is said to be taken from statistics furnished by the Census Bureau.

In glancing over this table I notice that the per capita cost for my own city is very much greater than that for any other city on the list. This amount is given as $107.72. Multiplying this by our population would give a total expenditure of more than thirty-two million dollars per year. I have endeavored to analyze these figures in order to ascertain how such a huge total for a city of our size can possibly be arrived at. It is not shown in the statement whether or not these figures include taxes paid for county, state and school, as well as strictly municipal, expenses. However, for Seattle the figures are as follows:

For municipal purposes..	$6,320,000.00	
Per capita		$19.80
For schools	5,640,000.00	
Per capita		17.90
For state	1,500,000.00	
Per capita		4.70
For county	1,760,000.00	
Per capita		5.60
For Port of Seattle	250,000.00	
Per capita		0.80
Total	$15,470,000.00	$48.80

The above are amounts paid by taxation. The city of Seattle owns its own water system, light and power system, and street railway system. The cost of operating these three utilities—all of which cost is met by revenues derived therefrom—is $12,000,000, or $38 per capita.

There was also spent last year by the city for local improvements, the cost of which is paid by special assessments upon property benefited, $2,500,000, on the enlargement of the light and power system $2,000,000, and for construction of school buildings approximately $1,500,000, or a total of $6,000,000. If this were figured as a per capita charge, the amount would be $19.80. If all these figures be added together it makes a total of $105.80 per capita, which agrees substantially with the figures shown.

In other words, in figuring the expenses of the city, the statistics evidently take into account money spent for capital expenditures and the money spent for the operation of self-supporting utilities, as well as the money raised by direct taxation. It certainly needs no argument that money spent on capital account should not be included in these figures, for the reason that they all include amounts set aside annually for redemption of bonds. Nor should money spent for the operation of public utilities be included, for the reason that some cities own and operate none at all, while others have a considerable investment of this character. If this be the method used in the computation of statistics shown in these tables, they are certainly utterly worthless. To make arbitrary classifications, as has apparently been done in this case, leads only to confusion and not to enlightenment.

The city of Seattle has lived within its income for many years and does not issue bonds to meet deficits in current funds. If there happens to be a deficit in the annual expense account, this deficit is included in the tax levy for the succeeding year.

I have been endeavoring for some time to ascertain the comparative expenditures of cities, but have found the problem a very difficult one owing to the very diverse methods of taxation and of accounting. The Census Bureau would confer a very great benefit if, instead of circulating figures which lead to grossly incorrect comparisons, it would analyze the cost of city government and present the results in such a way that intelligent conclusions might be derived therefrom.

A. H. DIMMOCK,
City Engineer.

Seattle, Wash.,
May 25, 1922.

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The City's Legal Rights and Duties

Information for City Attorneys and Other Municipal Officers, Summarizing Important Court Decisions and Legislation

Conducted by A. L. H. Street, Attorney at Law

Ordinance Discriminating Against Nonresident Advertising Held to Be Void

An ordinance is held by the Illinois Supreme Court to have been void where it purported to prohibit the distribution of advertising matter without a license and execution of a bond to be approved by the city clerk, but made an exception in favor of advertisements of home entertainments and of sales by citizens on permit from the mayor being obtained. (City of Elgin vs. Winchester, 133 Northeastern Reporter, 205.) The Court remarked:

> "In our judgment, under the authorities, the ordinance is void as being discriminatory between residents and non-residents as to the payment of license fees. A citizen of the city may procure a permit without the payment of a license fee, and distribute advertisements concerning sales by such citizens. Beyond question the ordinance permits local merchants to advertise by the distribution of circulars or pamphlets. A statute or ordinance which in imposing a license tax discriminates in favor of the residents of a state or city and against non-residents of the same class is unconstitutional."

Jurisdiction of Municipal Courts Held to Be Limited to Acts Committed Within Boundaries

In the case of Rieser vs. Ward, 236 Southwestern Reporter, 255, it is decided by the Kentucky Court of Appeals that under provisions of the Commonwealth's constitution the police court of a city cannot be given jurisdiction of offenses committed on property belonging to the city outside its boundaries, nor on highways maintained by it outside such boundaries. So, it is held that statutes empowering the city of Louisville to acquire parks outside the city limits are invalid in so far as they purport to give jurisdiction to the police court over offenses committed on a parkway connecting the city with a park but lying outside the city limits.

General Funds Not Chargeable With Special Assessment Deficiency

A mutual mistaken belief by the city and its contractor that special assessments of property benefited would produce sufficient funds to pay for a local improvement does not authorize the city to pay for such improvement from its general funds. In such case there is no moral obligation on the city to so pay from it general funds. So the city cannot issue bonds creating a general indebtedness to make such payments, especially where the charter forbids allowance, or recognition of any demand against the city not a valid claim against it at the time of its creation. (Washington Supreme Court, Pratt vs. City of Seattle, 189 Pacific Reporter, 565.)

Compulsory Municipal Bonus to Employees While in Military Service

In the case of Henn vs. City of Mt. Vernon, 189 New York Supplement, 851, the Appellate Division of the New York Supreme Court confirmed the validity of a New York statute requiring cities to pay their officers and employees while engaged in military service the difference between their salaries and the lesser amounts received while so engaged. It was decided that the law does not provide for an unconstitutional disposal of municipal funds. In the course of its opinion the Court says:

> "The World War and our participation in it constituted a very great emergency, and the very widest scope in favor of legislative power to provide for action therein should be given by way of constitutional interpretation. We have recently had a striking instance of this in the decisions both of the Court of Appeals and of the United States Supreme Court maintaining the constitutionality of the recent rent statutes of this state. It is, indeed, now somewhat difficult to define what the lawmaking power may not do in aid of the prosecution of a war in which the nation is engaged, and therefore as well each component part of the nation."

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Aldermanic Districts Are Not Necessarily to be Apportioned According to Population

The validity of the New York Aldermanic Reapportionment Act (Laws 1921, c. 670) was under fire in the recent case of People on relation of Boyle v. Cruise, 189 New York Supplement, 338. One of the principal objections made against the law was that it provided for the formation of aldermanic districts on a basis disproportionate to population. On this point the Court says:

"As to the first ground, I think the challenge cannot be sustained. The aldermanic districts are apportioned substantially as are the assembly districts in the city. That apportionment has been acquiesced in and has not been judicially questioned. Nor do I think that it can be successfully questioned. There is no requirement in the constitution that the apportionment of aldermanic districts should be based upon the equality of population. In the matter of Dowling, 219 N. Y. 44, 113 N. E. 545, the Court of Appeals quoted from the Revised Record of the Constitutional Convention as found at page 54 of the record, where it reads:

"'We believe the provision to be sound in principle that somewhere in every representative government there should be a recognition of variety of interest and extent of territory, as well as of mere numbers united in interest and location. Such a departure from the rule of strict numerical representation is recognized by the Constitution of the United States in the organization of the Senate, by the constitution of the state of Pennsylvania in limiting the representation which the city of Philadelphia may have in its Senate to one-sixth of its members, and by the constitution of the state of Maryland in limiting the representation which the city of Baltimore may have. Similar provisions have been adopted by the state of Ohio affecting Cincinnati and Cleveland, the state of Missouri affecting St. Louis, the state of Rhode Island affecting Providence, and by other states of the Union having large cities. It is the rule, rather than the exception, throughout the Union.'

"It is not claimed that the difference in population was occasioned by any attempt to gerrymander the districts, as that word is commonly used. Staten Island has become a part of the Greater City of New York, with large territory and many substantial interests, which it is peculiarly within the province of the board of aldermen to supervise. To require an aldermanic district upon Staten Island to represent the same numerical population would be to disregard many material interests in that locality which are the subject of supervision and regulation by the board. Notwithstanding the general rule where such interests are not involved, where the equality of population is a fair basis of apportionment in a city situated as is New York City, with a congested population in certain localities and a more limited population in outlying districts, the interests of the community may well require those outlying districts to be represented to a greater extent than would be the case if their right to representation were measured simply by the number of their inhabitants. Without any requirement in the constitution to make the extent of the population the basis of the apportionment, other interests are entitled to be regarded in determining the division of aldermanic districts, and I am unable to find any such discrimination as violates any principle which lies at the foundation of a fair apportionment and division of such districts."

On the Calendar of Conventions

July 27-28.—Wilmington, N. C.
North Carolina Commercial Secretaries' Association. Annual meeting. Secretary, W. T. Ritter, Winston-Salem, N. C.

July 27-29.—Manistee, Mich.
Michigan Commercial Secretaries' Association. Semi-annual meeting. Secretary, C. W. Otto, Board of Commerce, Pontiac, Mich.

August 15-17.—Clinton, Iowa.
League of Iowa Municipalities. Annual meeting. Secretary, Frank G. Pierce, Marshalltown, Iowa.

August 15-18.—San Francisco, Calif.
International Association of Fire Engineers. Annual meeting. Secretary, James J. Mulcahey, City Hall, Yonkers, N. Y.

August 19-26.—Minneapolis, Minn.
American Institute of Park Executives. Annual convention. Secretary-Treasurer, Emmett P. Griffin, Superintendent of Parks, East St. Louis, Ill.

August 21-September 2.—Evanston, Ill.
National School for Commercial Secretaries. Address Robert B. Beach, Business Manager, Association of Commerce, Chicago, Ill.

August 22-25.—New Bedford, Mass.
International Association of Municipal Electricians. Annual convention. Secretary, Clarence R. George, City Electrician, Houston, Tex.

August 28-September 2.—Detroit, Mich.
National Safety Council. Annual Safety Congress. Secretary, W. H. Cameron, 168 North Michigan Avenue, Chicago, Ill.

August 29-31.—Williamsport, Pa.
League of Cities of the Third Class in Pennsylvania. Annual convention. Secretary, Fred H. Gates, City Clerk, Wilkes-Barre, Pa.

September 12-15.—New Bedford, Mass.
New England Water Works Association. Annual convention. Secretary, Frank J. Gifford, 715 Tremont Temple, Boston, Mass.

September 18-23.—Palo Alto, Calif.
Western Summer School of Community Leadership. Address: Mrs. C. A. Simmons, Registrar, American City Bureau, Merchants' Exchange Building, San Francisco, Calif.

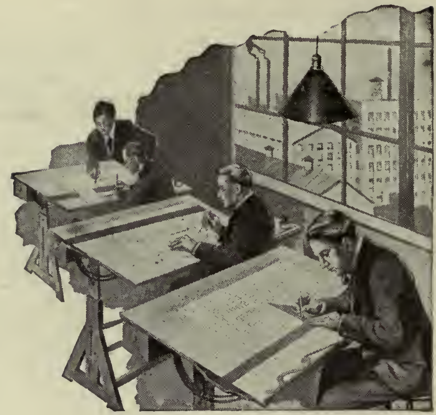
September 19-23.—Palo Alto, Calif.
League of California Municipalities. Annual convention. Executive Secretary, W. J. Locke, Ninth Floor, Pacific Building, San Francisco, Calif.

September 25-28.—Hot Springs, Ark.
Southwest Waterworks Association. Annual convention. Secretary, E. L. Fulkerson, 617 Washington Street, Waco, Tex.

October 1-6.—Cleveland, Ohio.
American Society for Municipal Improvements. Annual convention. Secretary, Charles Carroll Brown, P. O. Box 234, St. Petersburg, Fla.

October 16-19.—Chicago, Ill.
American Public Health Association. Annual meeting. Secretary, A. W. Hedrich, 370 Seventh Avenue, New York, N. Y.

October 23-25.—Chicago, Ill.
National Association of Commercial Organization Secretaries. Annual meeting. Secretary-Treasurer, John E. Northway, Chamber of Commerce, Hamilton, Ohio.



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CIVIC ART

Werner Hegeman and Elbert Peets. The Architectural Book Publishing Company; Paul Wenzel and Maurice Krakow. New York. 1922. VI + 298 pp. Illustrated. $40.

This monumental work, called the "American Vitruvius" after Colen Campbell's classic "Vitruvius Britannicus," published early in the Eighteenth Century, aims to bring out the necessity of extending the architect's sphere of influence, to emphasize the essential relation between a building and its setting, the necessity of protecting approaches, the desirability of grouping buildings into harmonious ensembles, and thus achieving unity, at least of a group of buildings and possibly even districts and entire cities.

The work itself is divided into seven great sections: the modern revival of civic art, plaza and court design in Europe, the grouping of buildings in America, architectural street design, garden art as civic art, city plans as unified designs, and the plan of Washington. A comprehensive index of illustrations and a list of books is included. The subject is so vast that it is impossible to mention more than a few of the topics discussed. In Chapter 3, The Grouping of Buildings in America, are the world's fairs, the development of the American college campus, hospital and other institutional groups, and American civic centers. In Chapter 6, City Plans as Unified Designs, there are discussed numerous European examples, American radial plans, rectangular plans, town extensions, gridiron and diagonal layouts, garden suburbs and garden cities, American war housing, and residential layouts.

No part of this book treats of the engineering aspect of city planning, for the authors feel that the city planning profession has been drifting too strongly in the directions of engineering and applied sociology. They recognize that this is natural, for there are problems of such tremendous importance in those fields which public officials and property owners can be induced to recognize, that the profession is attracted to them. But they contend that "while it is easier and more respectable to be an engineer, 'an uplifter,' or a business man than it is to be an artist," our city planning projects should not be finally decided without the sanction of at least one trained man whose primary interest is in the dignity and beauty of form and color.

A CITY PLAN FOR SPRINGFIELD, MASS.

Progress Report by the Planning Board, May, 1922, compiled and edited by the Technical Advisory Corporation, New York, N. Y.

This interesting pamphlet of sixty pages, well illustrated, discusses the city plan of Springfield, zoning, the equalization of land tax valuation, the distribution of public property, such as parks, playgrounds, and public schools, the difficult problem of street traffic and transit, including the bridge trolley loop, railroad stations and track relocation, and such minor problems as the public school athletic field, the location of certain new schools, the fire headquarters and various stations. It presents as an appendix an interim zoning ordinance. Particularly valuable are the illustrations of the typical field survey sheet, the regional thoroughfare map, the existing conditions maps, diagrams showing the relation of population to real estate valuation, and the population map. Springfield, already blessed with a magnificent municipal group, is on its way to secure a well-rounded plan, and the story, therefore, cannot fail to interest those who are studying similar problems elsewhere.

LANDSCAPE GARDENING

Frank A. Waugh. John Wiley & Sons, Inc., New York. 1922. XXI + 344 pp. Illustrated. $5.00 postpaid.

This text-book is particularly timely because of a growing appreciation of the value of landscape gardening in making city and suburban life more attractive. It covers the general subject of surveying, landscape gardening details, architectural details, domestic landscape gardening, civic problems, plant materials and planting, and the development of landscape in general. A bibliography on landscape gardening adds greatly to the value of the text. City officials will find in this text an excellent treatment of railroad station grounds, court house squares, the town common, playgrounds, civic centers, country school grounds, and a discussion of neighborhood parks, together with many helpful suggestions on street trees and on recreational facilities such as baseball fields, tennis courts and village centers.

AUTOMOBILE GREEN BOOK

Official Guide Book of Automobile Legal Association, 6 Beacon Street, Boston, Mass. No. 1, New England States and Trunk Lines West and South. No. 2, New York, New Jersey, Canada, Pennsylvania, and the East. 1922. Published by Scarborough Motor Guide Company, Indianapolis, Ind., and Boston, Mass. $3.00.

THE PURPOSES OF ZONING

"Zoning to Secure Amenities," by Barry Parker, F. R. I. B. A., and "Zoning Industrially and in Regard to Public Services," by W. H. Gaunt, O. B. E. Papers read at the meeting of the Town Planning Institute, 4, Arundel Street, London, W. C., England, March 3, 1922, with the discussion thereon at that meeting. Quarto. 22 pp. Containing also a statement on the height of buildings in London, prepared by the Council of the Institute, and one on "American Experience in Regard to High Buildings," specifically in New York City. (Apply to the Town Planning Institute.)

MOTOR VEHICLE COMMON CARRIERS

"State Regulation of Motor Vehicle Common Carriers." A preliminary report based on state laws in force January 1, 1922, and on bills pending before State Legislatures in session March 1, 1922. Published by the Motor Vehicle Conference Committee, 366 Madison Avenue, New York, N. Y. Quarto. 8 pp. (Apply to the committee.)

ZONING

By Edward M. Bassett, counsel of the Zoning Committee of New York. Revised 1922. Published by the National Municipal League, 261 Broadway, New York, N. Y., as Technical Pamphlet Series No. 5. A compact, but complete, handbook of zoning, covering the story of the spread of this movement, the reasons for zoning, the experiences of the various zoned cities, the correct principles and the best practice, the legal pitfalls, and a selected list of references. 32 pp. (Apply to publishers.)

MILWAUKEE'S TAX PROBLEM

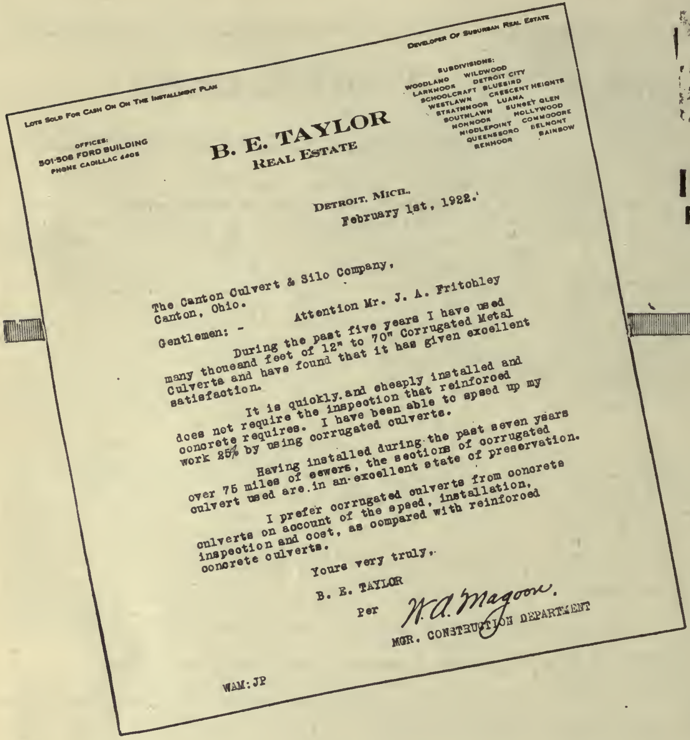
A 48-page pamphlet issued in 1921 by the Citizens' Bureau of Milwaukee, presenting the annual report for the year 1921 and including not only a summary of the work of the staff of the Bureau, but an appraisal of general conditions in the City Hall and the County Court House, a report of the civic progress in city and county governments, and a work-program for 1922. Growing expenditures, sources of revenue, the need for a financial plan, and policemen's and teachers' pensions, are parts of the discussion, and there is a report of engineering studies of bituminous macadam pavements, refuse disposal, and filtration in Milwaukee. (Apply to Harold L. Henderson, director, Citizens' Bureau of Milwaukee, Milwaukee, Wis.)

STATE SANITATION

A 16-page pamphlet under this title, by George C. Whipple, Professor of Sanitary Engineering, Harvard Engineering School. Reprint No. 710 from the U. S. Public Health Reports, November 25, 1921. Read at the Conference of State Sanitary Engineers, Boston, June 1, 1921. Definite, practical counsel and conclusions on the functions and administration of state health departments and on the work and standards of sanitary engineers. Price 5 cents. (Apply to the Government Printing Office, Washington, D. C.)

WATER-SUPPLY FOR WARREN, OHIO

"Report on the Water Resources of the Mahoning River, including Stream Control for Sanitary Purposes and for Water Supply." Prepared for the Mayor and City Council of the city of Warren, Ohio, by Alexander Potter, consulting engineer, 50 Church Street, New York, N. Y. November 1, 1920. 148 pp. with plans, profiles and typical detail drawings. A comprehensive



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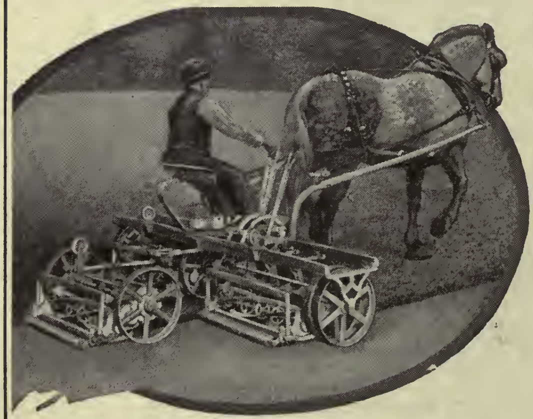

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and detailed study of the maximum economic development and conservation of the waters of the Mahoning River as affecting the city of Warren and the entire Mahoning Valley. Eight appendices take up in detail the various phases of the project referred to in the main report. (Apply to E. H. Braunberns, Director of Public Service, Warren, Ohio.)

SANITATION IN NEW JERSEY

Proceedings of the Forty-seventh Annual Meeting of the New Jersey Sanitary Association, held December 9 and 10, 1921, Lakewood, N. J. 75 pp. Including papers on "Bovine Tuberculosis as a Contributory Source of Human Tuberculosis;" "Coordination, the Need for Future Progress in Public Health;" "Public Health Administration in New Jersey;" "Importance of Maintaining High Educational Standards for Those Who Seek to Practice the Healing Art;" "B. Welchii and the Montclair Water-Supply;" "The Recent Epidemic of Typhoid Fever in Burlington County;" "The Problem of Garbage Disposal in the Cities of the Metropolitan District of New Jersey;" "Legal Enforcement of Health Laws." (Apply to Dr. Edward Guion, Secretary, New Jersey Sanitary Association, Atlantic City, N. J.)

DETROIT'S GROWTH

The June 1, 1922, issue of Public Business, published every two weeks by the Detroit Bureau of Governmental Research, Inc., shows in tabular form and by comparative curves the growth of Detroit since its reorganization in 1824 in respect to activities, population, taxes, debt and assessed wealth. (Apply to publishers.)

A COAL MANUAL

F. R. Wadleigh, Member American Institute Mining & Metallurgical Engineers. National Coal Mining News, Cincinnati, Ohio. 1921. 184 pp. $2.50.

A small-sized, handy manual, particularly prepared for buyers and users of coal. It contains information regarding the various uses of coal, its classifications, analysis of purchases, specifications and what they should cover, methods of sampling. It also contains some interesting suggestions regarding boilers and furnaces and methods of firing them, and valuable data on the storage of coal. This book should be in the hands of every municipal power-plant engineer who is using coal in any large quantity.

A CATECHISM OF STEAM ENGINEERING

Michael H. Gornston, Steam Engineer, Department of Education, New York City. D. Van Nostrand & Company, New York. 1922. VI + 428 pp. Illustrated. Price $4.00.

A well-prepared set of 1300 questions which may come up in the work of the power plant engineer, each with a simply worded answer. The value of these questions and answers is greatly enhanced by a carefully prepared index which enables the reader to find the questions on any subject on power plant operation which may be puzzling him.

SCHOOL GROUNDS AND PLAY

By Henry S. Curtis. 1922. Published by the Bureau of Education of the Department of the Interior. as Bulletin, 1921, No. 45. 32 pp. Giving interesting information on the new state laws, on the recreational element in the programs of public schools, and on various details of organized play and public recreation. A brief but valuable bibliography is included. (Apply to the Government Printing Office, Washington, D. C.)

PHILADELPHIA'S TRACTION PROBLEM

"Rapid Transit Handbook: Fares—Rentals—Taxation—Benefited Property Assessments—Men and Management." Respectfully addressed to Mayor of Philadelphia, members of City Council, Public Service Commission, Joint Transit Committee, P. R. T. stockholders and interested citizens generally, by T. E. Mitten, Chairman, Executive Committee, Philadelphia Rapid Transit Co. May, 1922. 8 pp. Giving conclusions and "The Ultimate Answer," involving city ownership and company operation. (Apply to Mr. Mitten.)

RECREATION IN OAKLAND, CALIF.

Bulletin of information about the Recreation Department of Oakland. Pocket size. 32 pp. Illustrated. "The object of this booklet is to inform you of the facilities for play and recreation in Oakland and to invite you to join them. It is also designed to advertise to the world the very exceptional advantages our city has to offer. Extra copies can be had by anyone." (Apply to Jay B. Nash, Superintendent of Recreation.)

CHICAGO TRACTION

Fourteenth annual report of the Board of Supervising Engineers, Chicago Traction, covering the fiscal year ended January 31, 1921. Published by the Board, 1921. Covering the general summary for the year, of Boards 1 and 2, and a summary of previous reports, an analytical review of operations, financial and statistical exhibits and schedules, and a detailed description of the work of the Engineering Department. 116 pp. Views, maps, tables. (Apply to Bion J. Arnold, Chairman of the Board.)

CINCINNATI'S COMMUNITY CHEST

A 32-page pamphlet of handy size, containing suggestions for presenting the facts about the Community Chest to the children of Cincinnati schools. A Report of the School Committee of the Cincinnati Community Chest and Council of Social Agencies. Showing how to introduce this subject into the work of the regular classes. (Apply to Randall J. Condon, Superintendent of Schools, Cincinnati, Ohio.)

THE BUFFALO PLAN

A 16-page folder of quarto size, one full side devoted to a map of Buffalo showing the general development of the Plan of Buffalo. The other pages explain the value and cost of the Plan and urge its adoption. Signed by the Buffalo City Planning Association, Inc., Buffalo Public Library Building, Buffalo, N. Y. (Apply to the Association.)

DIPHTHERIA PREVENTION

"Stamp It Out of the Schools!" A study of the menace of diphtheria, with suggestions for its prevention. A 16-page pamphlet issued by the Committee on Public Health of the Cleveland Chamber of Commerce. Approved by the Board of Directors January 20, 1922. Urging every Chamber member to spread the gospel of diphtheria prevention through the administration of toxin-antitoxin. (Apply to Roger G. Perkins, chairman of the committee.)

THE EFFECT OF ZONING ON LAND VALUES

A paper under this title, by S. G. Baxendale, F. S. I., read at the meeting of the Town Planning Institute, 4, Arundel Street, London. W. C., England, on April 7, 1922. 15 pp. Including also the discussion at the meeting. (Apply to the Town Planning Institute.)

INJURED SHADE TREES

"How to Care for Injured Shade Trees." Stencil Bulletin 50, revised, published and distributed by the Agricultural Extension Service of the College of Agriculture of the University of Wisconsin, K. L. Hatch, assistant director, the United States Department of Agriculture cooperating. 5 pp. of mimeographed text, with 1 p. of drawings showing how to repair trees that have suffered various injuries. (Apply to the publishers.)

THE CHILD AND THE COURT

An address with this title, by Hon. Charles L. Brown, President Judge of the Municipal Court of Philadelphia, before the civics teachers of the Philadelphia Public Schools, October 20, 1921. 16 pp. Explaining how juvenile offenders are dealt with in the Juvenile Division of the Municipal Court in Philadelphia. "We treat the children of different mental capacities differently, but we treat them all, no matter how they are in the scale, humanely." (Apply to author.)

PUBLIC SERVICE THROUGH THE COURTS

Two pamphlets issued under the auspices of the Municipal Court of Philadelphia in the series of 1921-1922 of Public Service Addresses: No. 9, containing two addresses, "The Value of Probation," by Rev. Russell H. Conwell, D. D., and "The National Development of Probation," by Charles L. Chute, secretary, National Probation Association, under the auspices of the Educational Department of the Municipal Court, December 23, 1921. 24 pp. "Humanizing Justice," a brief study of the Municipal Court of Philadelphia, by Maximilian P. E. Groszmann, Ph.D., under the auspices of the National Association for the Study and Education of Exceptional Children. 32 pp. "That the probation service of the Juvenile Division alone more than pays for its maintenance is proven by the figures presented in the Court Reports." (Apply to the Municipal Court of Philadelphia.)

NEW BRUNSWICK MUNICIPALITIES

Copy of the Proceedings of the Sixteenth Annual Convention of the Union of New Brunswick Municipalities, held in the city of Saint John August 24-26, 1921. Containing addresses on Safe Milk and Butter Production; City Government Under the Manager Plan; Uniform Municipal Accounting; Commission Government; Municipal Advertising—Its Nature—Does It Pay? Quarto. 61 pp. (Apply to J. King Kelley, secretary-treasurer of the Union, Saint John, N. B.)

TRINIDAD
in Chicago
Sheridan Road, from Foster Ave. to Devon Ave., paved with Trinidad Lake Asphalt in 1913. Still in splendid condition.

25,000 Miles of Streets
—and every mile Trinidad

Streets in all parts of the world—under all conditions of weather and traffic—from 1 to 43 years old. *And over 25,000 miles of them have been built since 1879.*

What more convincing proof could there be that Trinidad Lake Asphalt—nature-made and nature-tested—is "The Standard Paving Material of the World."

Many Trinidad paved streets have stood the wear and tear of traffic for over 25 years before a full cent per yard per year was spent on repairs. Think of it!

That's why thousands of municipalities that put long-lasting, economical service above first cost in the selection of street-paving material use Trinidad Lake Asphalt *exclusively.*

Trinidad Lake Asphalt is an Age-old, native bitumen. Centuries of exposure have but seasoned and toughened it—given it the ability to stand up under service on modern highways.

Let us tell you more about this wonderful material. Write for illustrated folders.

The Genasco Line includes asphaltic roofing, flooring, paints and allied protective products. Write for descriptive matter.

New York
Chicago
Pittsburgh

THE BARBER ASPHALT COMPANY
PHILADELPHIA

St. Louis
Kansas City
Atlanta
San Francisco

TRINIDAD LAKE ASPHALT

Methods, Materials and Appliances

News for City and County Engineers, City Managers, Water-Works Superintendents, City Controllers, Park Superintendents, Purchasing Agents, and Others Interested in the Economical Construction and Efficient Operation of Public Improvement Undertakings

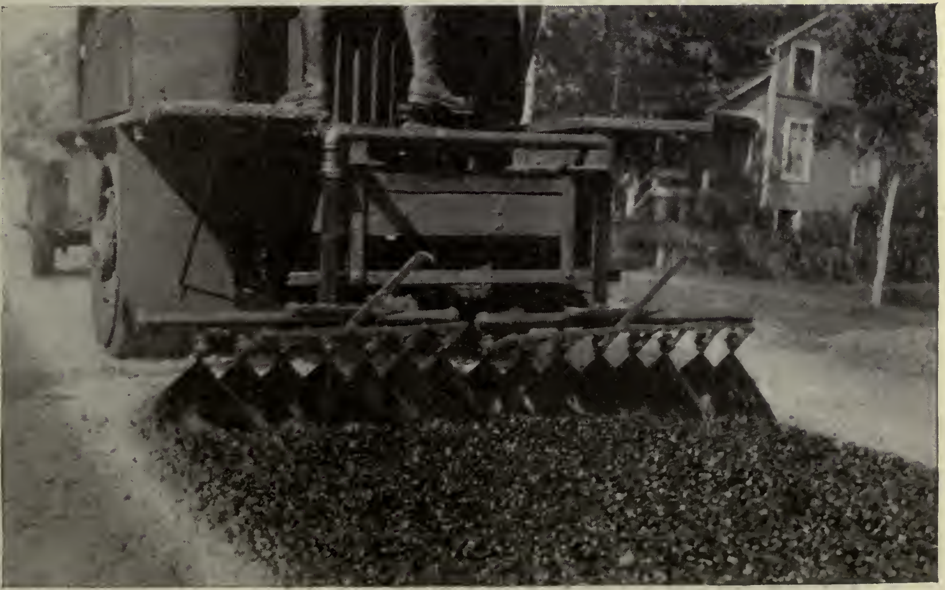
Road Oil Distributors

In the early days of permanent road construction, when but a comparatively small amount of bituminous binders was used annually, the horse-drawn distributor answered every purpose. In these times, however, when millions of gallons of bituminous materials and road preservatives are applied every year, the horse-drawn distributor has been supplanted by equipment that will handle material more rapidly and in much larger quantities.

The Champion distributor, as illustrated, is made by the Good Roads Machinery Company, Inc., Kennett Square, Pa. The distributing unit consists of an encased tank, a battery of burners, a series of pipes, a distributing manifold, and a pump which is driven by a power take-off shaft from the motor transmission and is located directly in the discharge line from the tank.

The standard distributing manifold is 8 feet in width, and is made in two 4-foot sections so that the material can be applied in varying widths as desired. It can be furnished in any length that may be required up to 16 feet, the longer manifolds necessarily costing somewhat more than the shorter sizes. Manifolds longer than 8 feet are designed only for surface treatment applications. The manifold is suspended by means of swivel joints so that it can be swung up and carried away from the road when not in actual use. The distributor is so designed that there are only four valves to be operated in the entire piping system.

Two sets of distributing nozzles are furnished, one of ⅜-inch and the other of ½-inch diameter in the discharge opening. Other intermediate sizes may be used if desired. The pump for applying the material to the road is of centrifugal pattern and is installed in a heated compartment. It is driven by sprockets from the power take-off of the automobile motor transmission. The heating device consists of a number of specially designed oil burners located beneath the tanks. They will increase the heat of a full tank load of material from 225 to 350 degrees Fahrenheit in one hour and a half. Kerosene atomized by air pressure is used as a fuel and is carried in 20-gallon tanks. A



APPLYING BITUMINOUS MATERIAL TO PENETRATION ROAD

The Truth About Drinking Fountains

1

UNSAFE

No. 1. Vertical stream which permits saliva and waste water from the drinker's mouth to fall back to source of supply. No longer considered sanitary.

2

UNSAFE

No. 2. Modification of vertical stream. This slight angle is little if any improvement over No. 1.

3

IMPRACTICAL

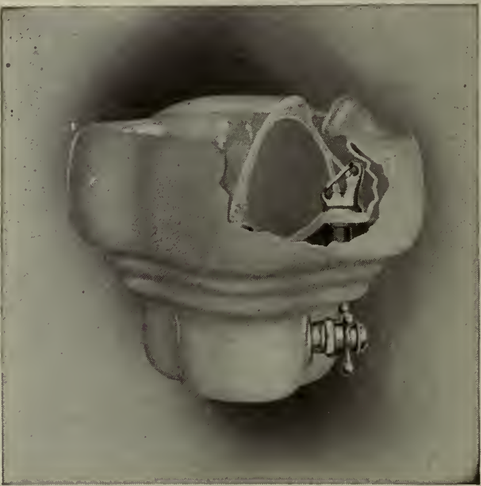
No. 3. More sanitary if properly used. However, stream is hose-like with no definite drinking point. Difficult to drink from.

THE PERFECT DRINKING FOUNTAIN STREAM WITH AUTOMATIC PRESSURE CONTROL

is produced by the famous PURITAN Cantonment "2-stream projector" illustrated in connection with our Puritan 605 Fountain. This stream producing device was designed for, approved and adopted by the Government during the war. Now recognized as superior by the largest interests and schools in the country.

EXCLUSIVE FEATURES

Practical drinking stream! Automatic stream control—Stream is never too high. Never too low.



Puritan No. 605 Vitreous China Wall Fountain

Puritan
CANTONMENT
DRINKING FOUNTAINS

Write for illustrated literature

THE HALSEY W. TAYLOR CO. - Warren, Ohio

small air pump operated by hand maintains pressure in the fuel tank.

The tank used with this distributor is of steel and completely jacketed. A large number of flues extend upward diagonally through the tank. These flues are so spaced that the heat is equally distributed throughout the material. The tank is made of 3/16-inch steel with flanged heads ¼-inch thick. The 600-gallon tank is equipped with 16 3-inch flues, the 800-gallon tank with 18 3-inch flues, and the 1,000-gallon tank with 20 3-inch flues. The tanks are mounted on 3½-, 5- and 7½-ton trucks, respectively.

MOTOR PUMPERS WORKING AT CHICAGO'S LATEST BIG FIRE

Ahrens-Fox Pumpers at Chicago's Latest Big Fire

According to the Chicago Fire Department Headquarters, in the big fire of March 15, 1922, fourteen Ahrens-Fox pumping engines were in service during the pumping time, aggregating 163 hours, without any mishap or trouble. One Ahrens-Fox pumper, Engine Company No. 22, had 1,100 feet of 2½-inch hose laid, giving a fine stream at the nozzle. The real demonstration of efficiency was given by three Ahrens-Fox machines on the west bank of the river at Jackson Boulevard. Engines 14 and 98, each with two leads laid off, were sending water about 900 feet. Engine 59, with one lead, was sending water about 1,500 feet. Three pumpers were in suction at the river with all of 14 feet lift from the water-level to the suction port.

The story of the fire is well told in the following report of engine companies' hours worked: No. 3, 8½ hours; No. 7, 14¾ hours; No. 10, 12 hours; No. 14, 16 hours; No. 22, 15 hours; No. 23, 11½ hours; No. 25, 15 hours; No. 27, 2 hours; No. 28, 8 hours; No. 40, 16 hours; No. 43, 13 hours; No. 59, 15 hours; No. 98, 5¼ hours; No. 107, 12 hours. In addition to these, eleven Ahrens-Fox pumpers were in reserve in various engine houses throughout the city.

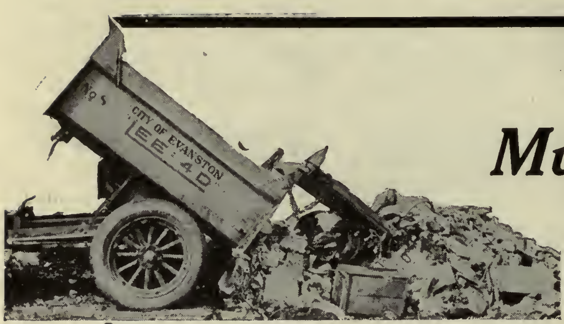
Pittsburgh Testing Laboratory Offices

The Pittsburgh Testing Laboratory, Pittsburgh, Pa., has announced the opening of a sales office with a complete inspection bureau at 1864 Railway Exchange Building, St. Louis, Mo., with N. C. Hoyles as District Manager. Mr. Hoyles is a graduate of Queens University, and has taken a post-graduate course at the University of Toronto. He has been with the Pittsburgh Testing Laboratories since 1908 in various capacities.

Harry M. Wey has been appointed Manager of the Chicago District of the Pittsburgh Testing Laboratory, with offices at 1560 Monadnock Block, Chicago, Ill.

Boston Engineers Move Offices

Fay, Spofford & Thorndike, consulting civil engineers, formerly at 15 Beacon Street, have announced the removal of their offices on July 1 to the Massachusetts Trust Building, 200 Devonshire Street, Boston 9, Mass.



For Municipal Service

LEE-4D

One Body for Garbage, Refuse and General Hauling

The new Lee 4-D refuse body which dumps without power is being used by a great many cities for hauling light rubbish, consisting of papers, boxes and trash of all kinds, garbage and refuse, crushed stone, excavated earth, barrels of tar, tools, supplies and other materials used by maintenance gangs in street work.

Bulletins 75-AC and 78 give specifications on all types. Secure these bulletins when you are making plans for the purchase of a new dumping body for any light-weight truck.

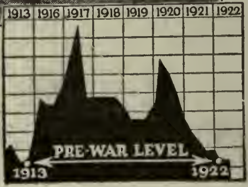
Bulletin 77-AC gives cost data of the operation of this equipment as used in Evanston, Ill.

LEE TRAILER & BODY COMPANY

2343 South La Salle Street CHICAGO, ILL.

Write for this Free Catalog to-day
A CATALOG GOOD IRON FENCES
ENTERPRISE IRON WORKS

Don't Wait for That Iron Fence!



Cost of Iron Back to 1913

The present prices on Enterprise Iron Fencing are the lowest in years. This is due largely to the reduced cost of iron, which went back to a pre-war level early this year. We believe our quotations will surprise you agreeably. Write for our new illustrated catalog and our free blue-print offer.

ENTERPRISE IRON WORKS
2464 Yandes Street, Indianapolis, Indiana

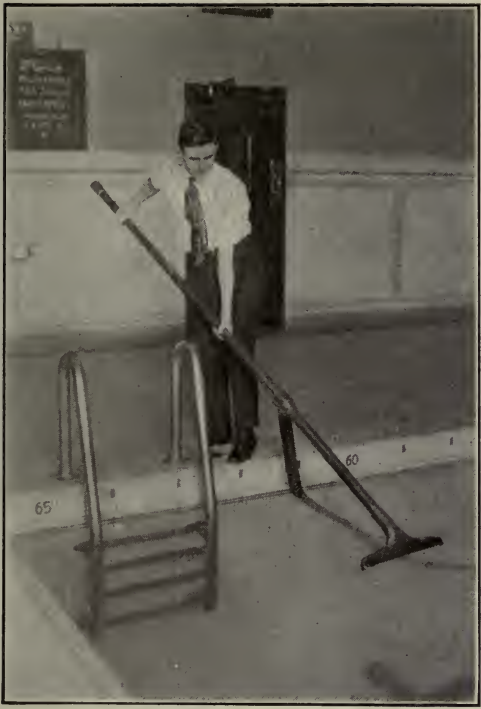
Free Blue Print.

Free blue-print showing Enterprise Fencing on your ground. Write for illustrated catalog and quotation today.

ENTERPRISE FENCING

Buy Now for Less.

Protect and beautify Schools, Hospitals, Parks, Estates, Public Buildings, Cemeteries, Asylums. Lowest cost in years.



STARTING TO CLEAN A SWIMMING POOL BY THE VACUUM SYSTEM

A Vacuum Cleaning System for Swimming Pools

Those who have been entrusted with the caretaking of swimming pools realize that sediment will accumulate upon the bottom and sides of the pool, in spite of the most careful filtration. This foreign matter finds its way into the pool by various routes. Dust is blown into the pool room through the windows or tracked into the pool by bathers, who also deposit hair, lint, cuticle or even plain dirt in the water, most of which settles during the quiet hours of the night.

To maintain a clean pool under these conditions has been an expensive proposition in the past, for thorough cleaning has been accomplished only by draining off the pool and scrubbing down the tile, losing the 400,000 to 500,000 gallons of water contained in the pool, and necessitating the reheating of the fresh water to the proper temperature, usually 70 degrees. The practice of scrubbing down the pool is resorted to several times per month and becomes quite an item of expense.

The United Electric Company, Canton, Ohio, has placed on the market the Tuec pool cleaning tool, which is virtually a vacuum cleaner especially designed for this service. This tool is made of phosphor bronze of sufficient weight to lie upon the bottom of the pool and suck up all sediment. It is built with a swivel connection, permitting movement in any direction. A stiff-bristled brush 15 inches long, with a port on each side, gathers up all the fine matter on the floor and walls of the pool and by a process of strong suction ejects this foreign matter into the sewer. A flat-surfaced inlet valve is placed below the water-line when a refiltering pump of the centrifugal is used. When a piston pump is used, the inlet valve may be located above the water-line if it is more convenient. To the inlet valve of the phosphor bronze a hose terminal is coupled with a screw connection. The other end of the 50-foot length of special pool hose is connected to the swivel fitting of the tool proper.

The handle of the tool is a heavy socket with a bayonet locking device to receive the extension handles. Two brass extension handles, one 6-foot and one 7-foot, are furnished with the equipment, to provide a total length of 16 feet for the tool, making every part of the largest pool accessible. In using the tool, the water drawn out during the cleaning period is ejected into the sewer by a by-pass connection and not returned to the filter.

Sharp Lawn-Mowers Insure Faultless Lawns

Sharpening the lawn-mowers used on golf-links, parks and public grounds has been a bothersome, as well as an expensive, labor, as will be testified by all whose duty it is to maintain extensive lawns. All this bother and loss of time is claimed to disappear with the Peerless lawn-mower sharpener, made by the Fate-Root-Heath Company, Plymouth, Ohio, which sharpens and accurately trues the blade of the mower in 15 minutes.

Employment Service for Engineers

The Federated American Engineering Societies, 29 West 39th Street, maintains a free employment bureau for engineers seeking professional and industrial positions. This bureau is a nation-wide clearing-house for the employment of technical men. The service rendered is valuable both to the employer and the employee. About thirty associations and federations throughout the United States are members of the Federated Societies. The employment bureau has advised The American City that those of its readers who are officials seeking men for special engineering work, are given a cordial invitation to make free use of the bureau at any time. The bureau is in a position to furnish civil, mechanical and electrical engineers, appraisers, accountants, purchasing engineers, inspectors, traffic specialists, city planners, and management specialists. The administration of the employment bureau of the Federated American Engineering Societies is in charge of W. V. Brown, Manager, 29 West 39th Street, New York City.

PAGE PROTECTION FENCE

—between Playground and School Garden

WHAT constitutes the ideal public playground? Is it not one where the children are always kept within their proper bounds—where the big boys are prohibited from invading the domain of the little fellows—where mischievous youngsters are prevented from trampling down the plants and flowers in school gardens which happen to adjoin the playground?

You may attain such an ideal condition if your playground is vigilantly watched by a host of monitors, whose eyes are constantly glued on the elusive urchins. That is one way to do it! But a decidedly cheaper and more effective way is to inclose each section of the playground with a strong, reliable, Page-Protection Fence.

Erect a Page-Protection Fence on your playground now and eliminate the need of constant watchfulness. It is absolutely unclimbable because the children cannot get a foothold on its closely woven fabric. It is the most economical means of enclosing a playground because its initial cost is far offset by its durability and long service.

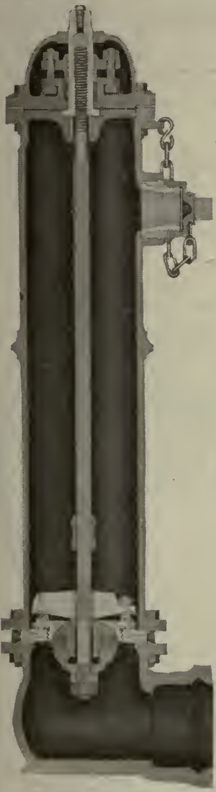
Page Steel and Wire Company
Bridgeport, Connecticut
District Sales Offices:
Chicago, New York, Pittsburgh, Portland, Ore., San Francisco

A Patented Compression Fire Hydrant

The patented compression fire hydrants made by the Darling Valve & Manufacturing Company, Williamsport, Pa., have a number of features of interest to the water-works man and the fire department official. The bronze operating nut at the top of the valve stem is in one piece and works directly on the valve rod. A screw in the top of this operating nut permits the lubrication of the operating threads without disturbing any other parts. The operating threads of the valve stem, being at the top of the hydrant, are accessible for lubricating, and are protected from injury by pebbles and other foreign matter which may be in the water passing through the hydrant. The hydrant cover may be taken off by removing two bolts. Absolute drainage on two sides prevents moisture from collecting on the under-side of the hydrant cover.

The flanged connection of the barrel to the elbow or base makes it possible to point the hydrant nozzles in any one of six positions on 4- and 4½-inch, eight positions on 5-inch and twelve positions on 6-inch hydrants.

The area of the hydrant barrel is about three times as great as the area of the valve opening, so that there is no perceptible loss in pressure caused by friction in delivering water to the nozzle connections. The inside diameter of the barrel on 4 and 4½-inch hydrants is 7¼ inches; on 5-inch, 8½ inches; and on 6-inch, 9½ inches. All the internal parts, includ- the main valve-seat, seat gaskets and drip valve-seats, can be removed through the top of the hydrant merely by unscrewing the bronze main valve-seat from the bronze seat ring. The main valve is made of sole leather, and is turned to a conical form to fit the tapered bronze seat, thus effecting a gradual closing of the hydrant, eliminating all possibility of water-hammer. The valve rod is in one piece, operating in the center of the hydrant, direct from the operating nut to the inlet valve. It has a vertical movement and is entirely free from torsional strain. The bronze hose nozzle is made larger in diameter on the inside end and tapering to size, to facilitate the flow of water.



A HYDRANT USED IN MANY CITIES

The elbow or base is made perfectly plain and contains no operating mechanism or guides; thus there are no places for sediment to collect in and cause any undue wear and interfere with the free and easy operation of the hydrant.

A CAN CARRIER FOR STREET CLEANERS

Rochester Can Acquires Menzies Company

The Rochester Can Company, Rochester, N.Y., has announced the purchase of the entire stock, equipment and good-will of the Menzies Street Cleaner Company of Amsterdam, N.Y. The Menzies Company has for years been regarded as one of the most prominent manufacturers of street cleaning equipment, both horse-drawn and hand types. Its line also includes steel shovels, a brand well known to hardware men and contractors. It is the plan of the Rochester Can Company to operate the business in its present location until such time as space can be provided in the Rochester plant.

Remarkable Maintenance Record

In 1881, Trinidad Lake asphalt paving was laid on Twelfth Street, Northwest from M to O Streets, Washington, D. C. For the past 13 years the maintenance cost of this street has been only 1.77 cents per square yard per year.

In the advertisement of the Barber Asphalt Company, Philadelphia, Pa., appearing in the May issue of The American City, this record was incomplete, as the figure 13 was omitted.

◆

TIFFIN STREET FLUSHERS
and
TIFFIN STREET SPRINKLERS
in these large cities mean
CLEANLINESS, SANITATION, HEALTHFULNESS

Montpelier, Vt.
Schenectady, N. Y.
Norfolk, Va.
Erie, Pa.
Warren, Ohio
Durham, N. C.
Portland, Ore.
Seattle, Wash.
Billings, Mont.
Fargo, N. D.
Waco, Texas
Peoria, Ill.

Ask them about our equipment. Write us for catalog and engineering data.

THE TIFFIN WAGON CO., Tiffin, Ohio

Header Curbs are Out of Date

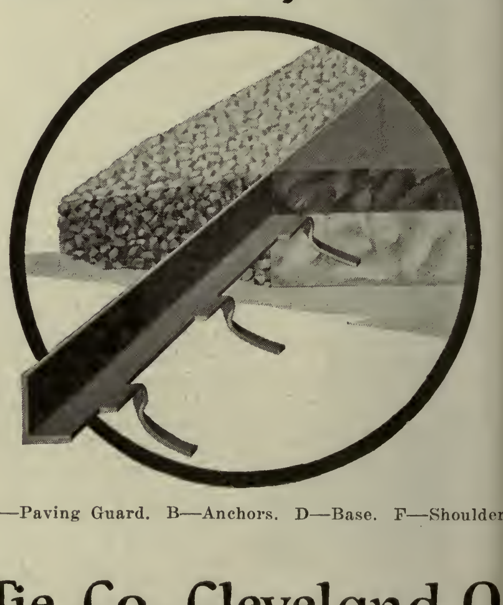
Header curbs are unsatisfactory—they are expensive and soon wear under traffic. Up-to-the-minute road builders are discontinuing them for

International Steel Paving Guards

These guards eliminate all forming for headers—the only form required is the concrete road form. They are made of standard structural angle with inch wide anchors cut out of the horizontal leg itself every ten inches, twisted and bent like reinforcing bars, and extend into the concrete holding the vertical or guarding leg of the angle rigidly in place.

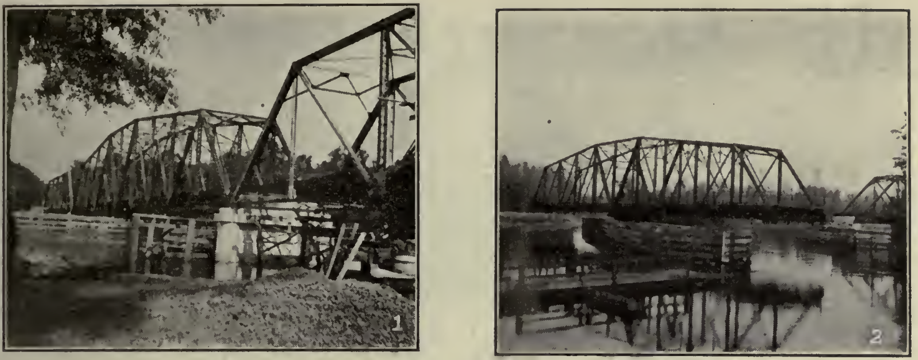
These guards absorb and distribute shocks of traffic—reinforce the paving base—and prevent disintegration of any kind of surface. They are adapted to all types of surface and foundation.

Use them on your next job.



A—Paving Guard. B—Anchors. D—Base. F—Shoulder.

International Steel Tie Co., Cleveland, O.



THE EDISTO RIVER BRIDGE AT JACKSONBORO, S. C.

Keeping Steel Highway Bridges in Condition

We reproduce above two different views of the Edisto River Bridge, Jacksonboro, S. C., which contains a 192-foot span and two 130-foot fixed spans with an 18-foot roadway. The bridge was designed and built by the Atlantic Bridge Company, of Roanoke, Va., and Charlotte, N. C., under the supervision of the South Carolina State Highway Department. It was erected for the Charleston-Colleton Counties, South Carolina, with Federal aid. All structural steel work on this bridge is protected with two field coats of Dixon's Silca-Graphite paint, made by the Dixon Crucible Company, Jersey City, N. J.

The large picture shows a bridge over Lake Summit, near Tuxedo, N. C., and is a 228-foot span with a 24-foot roadway. The substructure and superstructure were designed and built by the Atlantic Bridge Company for the Lake Summit Company, and the steel work is protected throughout with Dixon's Silica-Graphite paint.

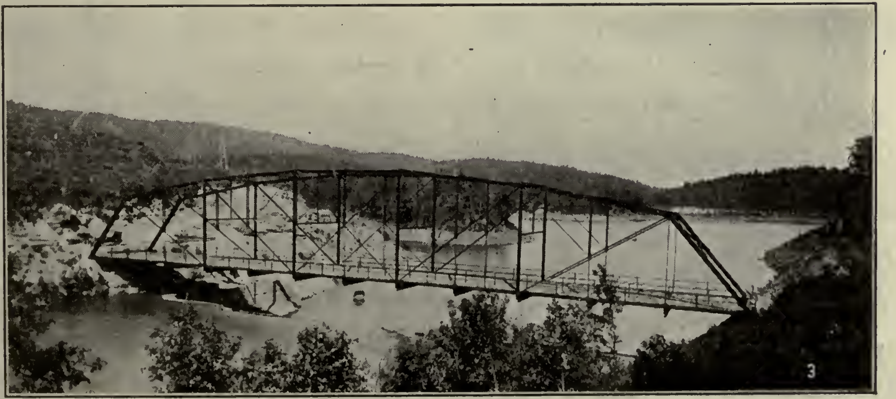
It is only through the use of established types of protective paints that county and city officials can insure long life to steel structures.

Hydraulic Rams for Municipal Water-Supplies

Cities, suburban districts and small towns located where there is an abundance of water with considerable natural fall, can well make use of the hydraulic ram for pumping water by water-power. Wherever a water-supply is available and arrangements can be made to get a fall or drop in this water for power, a hydraulic ram can be used. The water must be piped to the ram, which, in turn, must be kept 5 feet or more lower than the surface level of the water over the intake end of the supply pipe. The drop or difference of elevation is called the "power head." The height above the ram to which the water is to be pumped is called the "delivery head."

Hill hydraulic rams, made by the Seattle Machine Works, Seattle, Wash., are made to operate under a wide range of power and delivery heads and with any ratio of these heads from as low as 1 to 2½ up to as high as 1 to 30. Generally speaking, and within the limits of good operation, increasing the power head automatically increases the capacity of the ram.

Where the water-supply is obtained from a creek or stream, it is usually necessary to carry



BRIDGE OVER LAKE SUMMIT, N. C.

Half Round Culverts

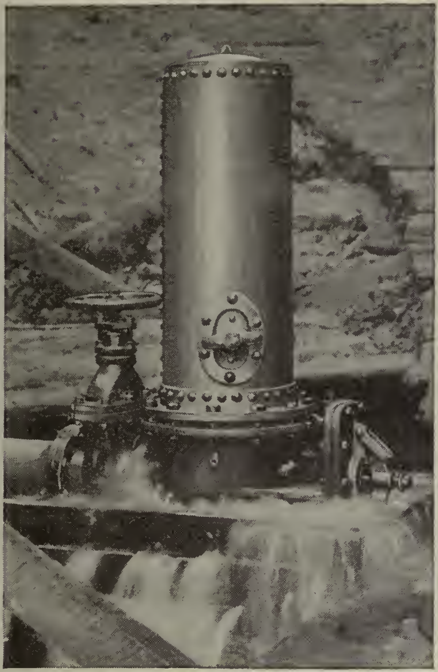
If you want to be more than 99 per cent sure that the culverts you have installed under your city streets or county highways will last indefinitely, install a NEWPORT CULVERT, made of "GENUINE OPEN HEARTH IRON", guaranteed to be 99.875 per cent pure iron-copper alloy.

NEWPORT CULVERTS are made in both round and half-round types of construction. The half—round type is particularly adapted to city and small town use, while the circular culvert is universally used for county highway work. The advantage of using the half-round culvert lies in its being particularly well adapted where the head room is not sufficient to install the full circle type of pipe, and in the further advantage of being able to clean it readily at any point in the event some obstruction causes the stoppage of same, which is frequently the case in city or small town use.

Send for booklets giving complete data on NEWPORT CULVERTS of "GENUINE OPEN HEARTH IRON"

NEWPORT CULVERT Co.

542 WEST 10TH STREET NEWPORT, KENTUCKY



A 6-INCH HYDRAULIC RAM INSTALLED TO PUMP 120,000 GALLONS OF WATER DAILY AT WOODWAY PARK, KING COUNTY, WASH.

it some distance down the stream to get a good operating head. This can be done by diverting the water and carrying it the required distance in a flume, a ditch or a pipe, which should, if possible, discharge into a tank or a small reservoir, from which the drive pipe of the proper length can be laid to the ram. If a pipe line should be too long to use as the regular drive pipe to the ram, it can, if desired, be arranged so that, in place of emptying into the supply tank, the stand-pipe can be put in the line and from this stand-pipe the drive line proper can be laid to the ram.

Birmingham Office for Central Foundry

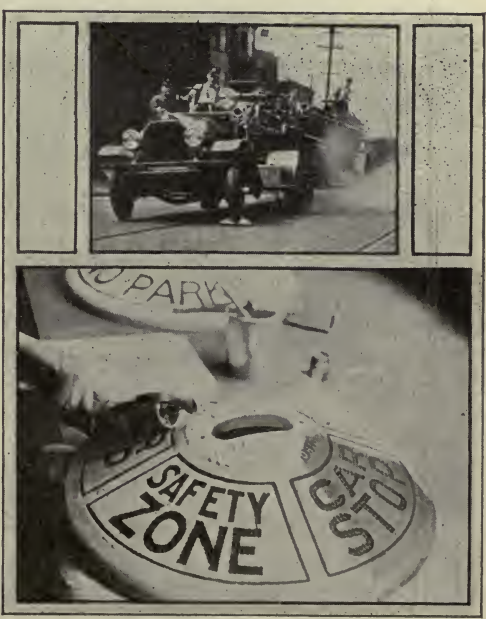
The Central Foundry Company, 41 East 42d Street, New York City, has announced the opening of a new branch sales office on the twenty-second floor of the Jefferson County Bank Building, Birmingham, Ala. T. C. Hyde is the manager of the new office, under the direction of J. L. Brierton, Vice-President and General Manager of the Central Iron & Coal Company. Mr. Hyde will continue the sale of Universal pipe in the Southern territory which he handled from the Central Foundry Company's Atlanta office, now discontinued.

Mound Traffic Markers

The increasing need of traffic markers to keep automobiles and trucks out of safety zones and to direct traffic, has led the Mound Traffic Equipment Company, 184 West Spring Street, Columbus, Ohio, to place on the market the new Mound traffic marker for street intersections, safety zones and for the night and day regulation of traffic.

The ordinary upright street intersection or safety zone sign is often the cause of serious accidents by collision with the sign itself. This occurs through purposely driving into the sign to avoid hitting another machine or a pedestrian. Vehicles of any kind can drive over the Mound type of marker in emergency without injury to the vehicle or the marker. The marker is of sufficient area and weight to give it a firm hold and is of ample strength to stand the shock of heavy vehicles. With the upright sign, accidents result from the fact that the visible part of the sign itself is frequently above the driver's natural line of vision, and is often not seen by him until too late to avoid striking the sign. When driving, the line of vision is naturally directed to the street surface a few yards ahead of the machine. The Mound type marker has a distinct advantage, as it is placed on the street surface with the lettered directions directly in line with the driver's sight.

This marker has an especially designed depressed letter which catches and reflects light from all sources, making brilliantly illuminated inscriptions both by day and by night, At night the marker catches a maximum of



FIRE ENGINE CROSSING TRAFFIC MARKER SHOWN BEING PAINTED IN "CLOSE-UP" BELOW

General Motors Trucks

GMC

Well digging rig on G M C Chassis used by W. F. Kernin at Sutherlin, Ore.

GMC Carries Well Digger Used in Getting Water for Oregon City

Firms who specialize in municipal work of various kinds have taken the experience of municipalities as a guide and have adopted G M C trucks for their hauling equipment.

Among these is W. F. Kernin, an Oregon well driller who has a splendid story to tell of his experience with a 2-ton G M C truck. Mr. Kernin specializes in drilling water wells for Oregon municipalities and he has mounted a rig on his G M C.

"We drilled 44 wells in 1921, writes Mr. Kernin, "and covered a 30 mile radius with the truck, which carries the rig easily. We can move 30 miles, set up the rig and get a good chunk drilled in one day. Power — the truck has worlds of it and can move the rig for $2.00 where it used to cost $100 with horses."

The operation illustrated was at Sutherlin, Ore., where six wells were drilled for the city, supplying 250,000 gallons a day.

Road contractors, pavers, garbage contractors and others also have adopted G M C as a standard. This is because G M C trucks give more continuous operation at a lower cost and for a longer period than has heretofore been averaged by motor trucks.

G M C trucks list at the factory as follows: One Ton, $1295; Two Ton, $2375; Three and One-Half Ton, $3600; Five Ton, $3950; Tax to be added.

GENERAL MOTORS TRUCK COMPANY

Division of General Motors Corporation

Pontiac, Michigan

DEALERS AND SERVICE IN MOST COMMUNITIES

the light from the street illumination, as well as from automobiles, and may be greatly intensified by the use of an overhead spotlight at street intersections. It may be repainted at small cost by an inexperienced workman. The cast-in letters cannot become effaced and do not need to be again outlined. They are refinished by a simple mechanical process.

Slow-Speed Trailers in Levee Work

The Mississippi River Levee Commission, operating heavy construction work at Whitehall Landing, Ark., is using 27 5-ton Holt Caterpillar tractors and 3 10-ton Caterpillar tractors in connection with a number of Miami reversible all-steel trailers made by the Miami Trailer Company, Troy, Ohio. The average haul is 500 feet, and the height of the level is from 35 to 45 feet. The 5-ton tractors each haul one Miami trailer carrying 4 cubic yards of material, and average 10 to 14 round trips per hour. On the same class of work 4 good mules are required to handle 1 cubic yard of material. Accordingly, 1 5-ton tractor and 1 trailer displace 20 mules and 4 drivers each trip, and are able to make easily 3 round trips to 2 round trips for the mule outfit.

A HEAVY-DUTY, HIGH-SPEED 6-TON TRAILER FOR GRADING

It is estimated that the actual cost of handling work of this character, not including interest and depreciation, with 10-ton tractors hauling and 5-ton tractors hauling material away with the slow-speed trailers, does not exceed 10 cents per cubic yard. The trailers used have a track of 5 feet 9 inches, measured from center to center of tires, and a wheelbase of 7 feet 5 inches. The body is built entirely of steel with 3/16-inch plates reinforced with angle-iron at the extreme top and bottom and further reinforced by angle-posts following the body line from top to bottom, all connections being riveted. The doors are made of No. 10 gage steel, reinforced with hot riveted angle-steel, giving a bottom opening 38 x 73 inches. Each trailer has a level capacity of 3 cubic yards, or 3½ to 4 cubic yards when slightly rounded.

Specialist in Electrolysis

E. R. Shepard, who has been associated with the Bureau of Standards for more than seven years in connection with electrolysis research and field surveys, has resigned and will devote his time hereafter to consulting work of a similar character. Mr. Shepard is well known through his publication on rail bonds and joints and track insulation and through his activities in connection with the publication of research work on the American Committee on Electrolysis. His address in the future will be 4111 Fessenden Street, Washington, D. C.

New District Engineer

The Portland Cement Association, 111 West Washington Street, Chicago, Ill., has announced the appointment of F. S. Altman as District Engineer in charge of the Minneapolis office of the Association, to succeed W. E. Hart, who has been transferred to the general office as manager of the Structural Bureau. The Minneapolis office, located in the Metropolitan Bank Building, has charge of the Association's work in Minnesota and North and South Dakota.

The Town's Money Saver

IN every community where Cletrac has become a part of the municipal machinery, it has won the endorsement of the town. Cletrac is a money saver!

The same people in the above illustration who are watching Cletrac put the finishing touch to the race track know that its ability to do an equally good and an equally economical job applies also to work in parks, grading roads, sprinkling streets, pushing snow plows, performing heavy hauling duties—in fact, doing almost any job around the town.

One municipal engineer writes—"I have no hesitation in voting Cletrac a great machine for municipal work, and hope to be able to induce my Council to see the economy in purchasing another."

Cletrac's low operating cost combined with its great work capacity saves money for the taxpayers in any community. We shall be glad to send you facts and figures on the work Cletrac is doing today for cities or towns like your own.

HARD THIS WAY, BUT—

EASY ON A TRACK THE CLETRAC WAY

THE CLEVELAND TRACTOR COMPANY

Largest Producers of Crawler Tractors in the World

Cletrac

REG. U.S. PAT. OFF.

19205 EUCLID AVE.
CLEVELAND,
OHIO

Gas Street Lighting

We are advised that the cities of Cambridge, Mass., Wilmington, Del., Wenonah, N. J., and Lowell, Mass., have recently renewed their gas street lighting contracts. The following municipalities have recently installed additional Welsbach gas street lamps: Kenmore, N. Y., Essex County Park Commission (Newark, N. J.), East Orange, N. J., Carrick, Pa., San Francisco, Calif., Revere Beach Reservation, Mass., St. Louis, Mo., Mount Vernon, N. Y., Rye Park, N. Y., Woodhaven, Conn., Woodmont, Conn., Camden, N. J., and Baltimore, Md.

GAS STREET LIGHT IN WASHINGTON, D. C.

An Emergency Truck for Shutting Off Water-Works Valves

An emergency shut-off truck for handling quick closure of large water-works valves has recently been developed by Payne Dean, Ltd., 103 Park Avenue, New York City. This emergency shut-off truck consists of a 1922 model Reo speed-wagon chassis fitted with a Payne Dean valve-operating take-off. The valve-operating mechanism is a special transmission permanently attached to the chassis and arranged to carry square valve operating keys of different lengths. All three forward and reverse speeds of the truck are available for operating the valve-closing mechanism.

On each valve in the zone of operation is attached a Dean position indicator which shows the exact number of turns the valve is open. This indicator is applied to the valve without any alterations whatever and takes the place of the valve nut. The operating end has a standard 2-inch nut to suit both truck and hand wrenches. On the dashboard in front of the driver is the automatic cut-off indicator having an illuminated dial and adjustable numbers. The numbers on this dial are set to correspond with the numbers on the dial of the valve-position indicator, after which the clutch is let in through, perhaps, the second speed of the car. The valve completely closes and the engine automatically stops. It is impossible to jam the valve, and for further protection the cut-off may be set to stop a few turns from full closed position.

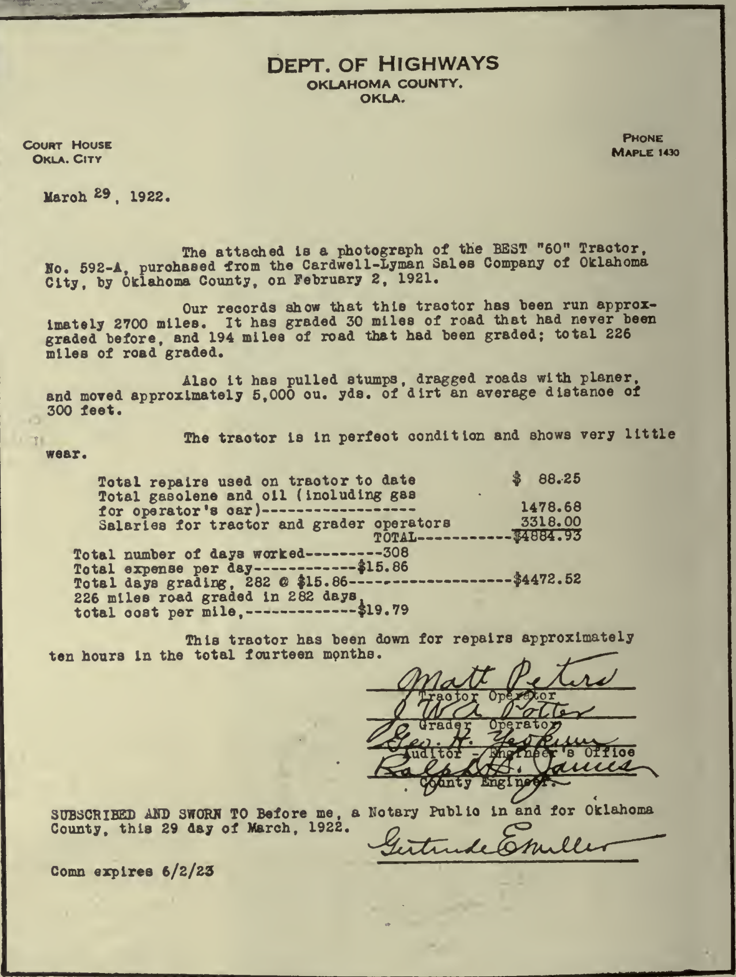
The automatic cut-off operates also when opening the valve. By aid of special universal joints, the vertical key shaft may be as much as 10 inches off center. An adjustable shear coupling in an accessible position is provided for protecting the valve stem. A special low-head centrifugal pump is provided under the rear end of the body, driven by the transmission and provided with a clutching and de-clutching device.

Among the city water departments using this truck shut-off are: Department of Water Supply, New York City; Bureau of Water, New Bedford, Mass; Bureau of Water, Boston, Mass.; Metropolitan District, Boston, Mass.; Bureau of Water, Philadelphia, Pa.

The Hiram Phillips Engineering Company

The Hiram Phillips Engineering Company, Fullerton Building, St. Louis, and Bertig Building, Paragould, Ark., has been organized as successor to W. R. Heagler & Sons, of Paragould, Ark., and Hiram Phillips and Paul P. Phillips, of St. Louis. Mr. Heagler will have charge of the Paragould office, and Paul P. Phillips will look after the St. Louis office. The organizations which make up this new engineering company have handled considerable municipal water-supply work, drainage, levee and irrigation work, sanitary and storm sewers, paving, steam and electric railroad work and highway construction jobs in the last few years, particularly in Missouri, Arkansas, Colorado and Illinois.

PHILLIPS UNIVERSITY LIBRARY



DEPT. OF HIGHWAYS
OKLAHOMA COUNTY.
OKLA.

COURT HOUSE
OKLA. CITY

PHONE
MAPLE 1430

March 29, 1922.

The attached is a photograph of the BEST "60" Tractor, No. 592-A, purchased from the Cardwell-Lyman Sales Company of Oklahoma City, by Oklahoma County, on February 2, 1921.

Our records show that this tractor has been run approximately 2700 miles. It has graded 30 miles of road that had never been graded before, and 194 miles of road that had been graded; total 226 miles of road graded.

Also it has pulled stumps, dragged roads with planer, and moved approximately 5,000 cu. yds. of dirt an average distance of 300 feet.

The tractor is in perfect condition and shows very little wear.

Total repairs used on tractor to date	$ 88.25
Total gasolene and oil (including gas for operator's car)------------------	1478.68
Salaries for tractor and grader operators	3318.00
TOTAL------------	$4884.93

Total number of days worked---------308
Total expense per day------------$15.86
Total days grading, 282 @ $15.86-------------------$4472.52
226 miles road graded in 282 days,
total cost per mile,-------------$19.79

This tractor has been down for repairs approximately ten hours in the total fourteen months.

Matt Peters
Tractor Operator
J W A Potter
Grader Operator
Geo. H. Yoakum
Auditor - Engineer's Office
Ralph H. James
County Engineer.

SUBSCRIBED AND SWORN TO Before me, a Notary Public in and for Oklahoma County, this 29 day of March, 1922.

Gertrude E. Miller

Comn expires 6/2/23

Write for full data, prices and the names of our nearest dealers. Let us give you the details of how economically Best Tractors build and maintain streets and roads.

C. L. BEST TRACTOR CO.

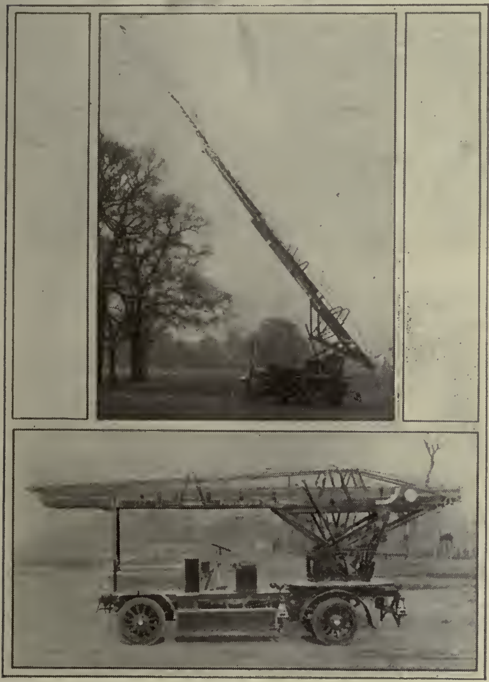
Factory and General Office
SAN LEANDRO, CALIFORNIA

Distributing Warehouses
SPOKANE, WASH., ST. LOUIS, MO.

BEST TRACTORS

Wasser Becomes President of A. R. B. A.

Thomas J. Wasser, State Highway Engineer of New Jersey, was elected President of the American Road Builders' Association at the adjourned meeting on June 15, 1922.



AN EXTENSION LADDER WITH SHORT WHEEL-BASE

An English Motor Turntable Fire Ladder

An extension ladder with a short wheel-base somewhat different from the long wheel-base type used in the United States, is manufactured by Merryweather & Sons, Greenwich Road, F. E. 10, London, England, and is in quite general use in that country. The mechanism for raising the ladders to an upright position and extending them telescopically is operated by the same motor which drives the machine itself. After the ladder-operating mechanism is put into gear, one man, by the manipulation of a pair of levers, has complete control of the raising and extension of the ladders, both of which operations can be carried on simultaneously. The chassis of the turntable ladder is propelled by a 4-cylinder motor, producing 65 brake horse-power.

On the upper side of the chassis framing directly over the rear axle is fixed a steel forged ring upon which revolves an angle steel ring, carrying the whole of the ladder unit. On the upper ring is constructed a section steel framework carrying the fulcrum upon which the ladders are swung and the whole of the details of the operating mechanism for working the ladders. The ladder-operating mechanism consists of a vertical spindle in the center of the turntable rings, driven direct from the crank-shaft of the motor through the changed speed gear-box and by a bevel-toothed gearing mounted on the base of the turntable. This mechanism is thrown in and out of action with the transmission gear of the motor by a hand lever operated from the driver's seat.

The gear for raising the ladders consists of a pair of screwed shafts driven through bevel wheels by one of the horizontal shafts. The gear for extending the ladders consists of a revolving drum, driven by a toothed wheel speed reduction gearing from one of the horizontal shafts, on which drum is wound a flexible steel rope running over a pulley on the fulcrum spindle, and attached to the foot of the first sliding ladder. An automatic ratchet and pawl gear is provided. The ladders are revolved around the turntable by a worm-and-wheel gearing operating through a vertical spindle, a toothed pinion engaging with a toothed ring fixed to the lower turntable ring. The ladders can be slewed around on the turntable in a complete circle.

Indicator plates showing the extension of the ladders and the safe angle at which they can be worked are placed in full view of the man operating the levers, and safety devices are provided to prevent any over-extension. The ladders are constructed in four sections, the lowest section being pivoted on the frame and adjusted laterally to it by a screw gearing for keeping the ladders always plumb sideways if the motor chassis is standing on uneven ground. The sliding ladders are raised simultaneously by the wire rope, and each ladder is fitted with an automatic safety clutch which would come into action should a rope break. The ladder sides are made of selected Oregon pine with oak rungs dovetailed into metal sockets recessed into the ladder sides, each rung forming a stretcher without any holes being made through the sides of the ladders. The ladders are constructed to reach from 60 to 90 feet if necessary.

TOWNSHIP TO LIGHT ALL ITS HIGHWAYS

The township of Amherst, N. Y., which lies adjacent to Buffalo, has decided to illuminate the highways within its borders, this being the first instance, so far as is known, in which a township has decided to light all its roads. The work of lighting the one hundred miles of roads will be spread through a period of three years, and the complete installation will consist of between 1,000 and 1,500 units, including those to be placed along the portion of the Buffalo-Niagara Falls Boulevard.

Packard - Northern Passes Twelve Hour Underwriters Pumping Test --- 750 Gallons

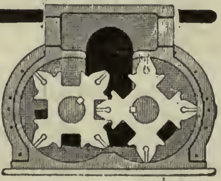
100%

May 23rd, a Standard Packard Twin Six chassis equipped with Northern Rotary Pump passed the 750 gallon standard Underwriters Pumping test with a perfect score. Test was conducted by Engineer Woodcock of Chicago office of National Board of Fire Underwriters. This test was the equivalent of running this car 65 miles per hour continuously for over 14 hours. (Pumper was on the job at 6:00—Mr. Woodcock arrived from Chicago and took his first reading at 8:39.)

It's Another Victory for

The Northern Rotary Pump

NORTHERN
ROTARY
PUMPS



"MORE GALLONS PER HORSE POWER"
Send for literature.

These cities are using Twin Six Packard Pumpers—
Madera, Pennsylvania.
Corsicana, Texas.
Bridgeport, Connecticut.
South Saint Paul, Minn.

These cities have ordered—
Hershey, Pennsylvania.
Reierstown, Maryland.
Wierton, West Virginia.
Wilmington, N. C.
Meriden, Connecticut.

NORTHERN FIRE APPARATUS CO.
MINNEAPOLIS, MINNESOTA. U.S.A.

Volume XXVII Number 2

The American City Magazine

New York August 1922

Fire Prevention and Fire Protection Campaigns*

The Public Water-Supply and the Part Played by the Local Water-Works Superintendent

By Frank C. Jordan

Secretary, Indianapolis Water Company

A CAREFUL survey seems to indicate that the only answer which our country makes to the ever-increasing fire loss is to add largely to its insurance premiums and to its fire departments, both in men and equipment. To-day our fire departments are recognized as the most efficient in the world; and well they need be. We are confronted with the lamentable fact that our country, with all of its wonderful development and wonderful fire-fighting force and equipment, has an annual fire loss of almost $5 per capita, whereas the foreign countries, with antiquated fire-fighting equipment but with careful habits reinforced by severe personal liability laws, have an annual per capita fire loss ranging from 11 to 60 cents.

In view of our appalling loss in life and property, it is imperative that all national organizations give most careful attention to the question of fire protection and fire prevention and exert every effort to bring about the elimination of all fires classed as preventable. It is high time that we turn the spotlight of publicity on our fire loss, make a careful study of the causes of our fires, and map out a carefully prepared campaign of education, to the end that the right-thinking people of this country may understand the seriousness of our fire loss and take proper steps to cut this loss to a minimum figure. This campaign of education should be followed by the enactment of rigid laws covering personal liability for preventable fires, and these laws should be enforced to the letter so that the irresponsible or evil-minded citizen will be compelled to eliminate preventable fires.

> **America's fire loss has reached the proportions of a national calamity and we are becoming a criminally careless people. This matter of burning four or five hundred million dollars' worth of property every year has ceased to be a matter of no concern. Our increasing fire loss stands as a serious indictment of the American public. Our 1921 fire loss means that five hundred million dollars' worth of our natural and created resources are wiped out of existence. There is a prevailing opinion that fire insurance companies in some mysterious way make good our loss by fire. The proceeds of a fire insurance policy may reimburse the individual for the loss he has sustained, but no amount of money can restore a burned structure; therefore, when a fire occurs, everybody loses.**

The fire department is not maintained to protect a man from the results of his negligence, and when he calls upon the city in any such case he should be made to pay for this service. No civilized country should expect its firemen to risk their lives in fighting fires which are easily preventable. In many of the foreign countries, a man who has a fire must prove to the court that he was in no way responsible for the fire, or he is subjected to a fine and the loss of his insurance. The public conscience has become dulled to the necessity for any fire prevention measures. We feel relieved when we read the words, "Fully covered by insurance," and we feel that some soulless corporation called an insurance company will shake a tree bearing a never-ending crop of dollars and gather up this money and hand it to the insured, fully compensating him for all loss. We overlook the fact that our tremendous fire loss, plus the cost of operating insurance companies, is borne by all of us in the way of insurance premiums and that this amount constitutes one of our greatest national expenditures. Only a few years ago the average insurance agent took very little interest in the subject of fire prevention, the fact of an increase in fire loss being used by him as an argument to his clients to take out more insurance. The progressive insurance agents of to-day, however, take a different view of the matter, and President F. J. Fox of the National Association of Insurance Agents says:

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* From a paper presented before the American Water Works Association, May 16, 1922.

> "Although it may seem to the short-sighted agent poor business to recommend to an insured that if a certain pile of rubbish is disposed of, the rate can be reduced from $1.25 to 13 cents, as a matter of fact such advice is a part of the duty every agent owes to his clients, even though such advice may reduce the actual premium rate involved."

He further states that:

> "It is a notable fact that the press of the country has been active in aiding communities to reduce their fire losses, and it is absolutely essential that reputable agents throughout the country cooperate with every ounce of energy to the same end."

The Part Played by the Water Department

The success of a fire prevention program will be due in no small measure to cooperation on the part of the water-plant superintendent, and his first duty will be to see that his property is fully equipped to furnish adequate fire protection service. This may require the expenditure of a considerable amount of money, but the value of the adequate fire protection service will far outweigh the fixed charges on the extensions and additions necessary to bring the plant up to a point where it can furnish excellent service. The Committee on Fire Prevention and Engineering Standards of the National Board of Fire Underwriters of New York has made a large number of reports on the water departments of the country, and if its suggestions are carried out, these fire and water departments would be in position to furnish excellent service and we would to the fullest extent cooperate in the fire prevention program. During the past fifteen years, the National Board of Fire Underwriters has made several reports on the Indianapolis Water Company's property, and we have found these reports exceedingly valuable in that they have pointed out our weak spots and have guided us in mapping out our future extensions and additions.

A high fire loss in a city raises a question as to the integrity of the water-plant to the same degree that a high typhoid rate raises a question in the minds of the people as to the purity of the water-supply. These assumptions on the part of the public are not entirely true, but nevertheless they exist in the minds of many of our citizens. The up-to-date water-works official has made every effort to eliminate typhoid, and he should work just as hard toward the elimination of preventable fires. If a fire prevention campaign has been inaugurated in this city, he should cooperate with it; if none has been inaugurated, he should initiate one and do his utmost to carry it through to a successful conclusion.

Acting on this principle, and on the invitation of W. J. Curran, of the Indianapolis Salvage Corps, and E. M. Sellers, manager of the Indiana Inspection Bureau, the writer suggested to the Indianapolis Chamber of Commerce the formation of a Fire Prevention Committee. This was done in the early part of April, 1921, and the writer was made Chairman of a Fire Prevention Committee consisting of about 1,200 Indianapolis citizens. At the outset, we made a most careful study of our fire loss and were amazed to find that it had increased from a per capita loss of $1.75 in 1910 to a per capita loss of $5.10 for the year 1920, and that the average Indianapolis citizen had increased his careless habits in a greater ratio than the city had been able to increase its fire-fighting facilities. Our investigation showed that in the year 1910 our city had 5.8 fires per thousand population, and that this had increased to 10.7 fires per thousand population during the year 1920. After going into the matter with great care, we determined that this great fire loss could not be checked by any campaign of one week or one month, and when our campaign was launched we went into it determined to spend four or five years if necessary, to achieve the results for which we were working, namely, a cleaner and healthier Indianapolis with an exceptionally low fire loss. At the outset of the 1921 campaign, the city evidenced its interest by defraying the expenses of the fire prevention campaign, and during the 1921 campaign—and the same will be true of the 1922 campaign—not one dollar was put up by any one who might in any way be interested from an ulterior motive. The Fire Department and, in fact, all city departments, have cooperated in an exceptionally fine way and have done their utmost in the cause of fire prevention. No finer service has been rendered by any one than that rendered by the public and parochial schools, and a large measure of the success of our campaign has been due to the exceptionally fine cooperation accorded by these organizations. Through the instrumentality of thousands of fire prevention essays, programs, and many talks by teachers, the subject of fire prevention is being taught to the younger generation, and it is our firm conviction that within a few years a careless people, and a consequent high fire loss, will be unknown.

The churches, Sunday schools and civic clubs have at all times taken a lively interest in the subject of fire prevention and have given much publicity to our campaign. The Board of Sanitary Commissioners took upon its shoulders the burden of removing all rubbish and refuse of any kind which had accumulated around the homes. About 250,000 pieces of fire prevention literature were distributed, and fire prevention cards are still hanging in thousands of Indianapolis homes. Added to this cooperation from the city officials, schools, clubs, etc., was the exceptionally fine cooperation from citizens in general. The net result of all of these efforts during 1921 was a great decrease in our fire loss and a surprisingly large decrease in our loss of life. Our 1921 fire loss showed a decrease of $550,000, as compared with 1920, and from April 1, 1921, to the present time but one person has been burned to death in the city, instead of our usual annual loss of from 12 to 20. The greatest result, however, of the 1921 fire prevention campaign was the laying of the foundation for a greater fire prevention effort, and the 1922 program holds promise of even greater success than was attained in 1921.

Conserve Our Resources

The depletion of our resources by fire is in itself an exceedingly serious matter, but the seriousness of the financial loss is greatly exceeded by the seriousness of our loss of life due to fire. The 1920 *figures show that* 15,219 *persons were burned to death in the United States and* 17,641 *were seriously injured;* 82 *per cent of the dead and injured were mothers and children, and* 92 *per cent of the fires that caused these fatalities were the result of carelessness or negligence. Carefully prepared statistics indicate that approximately* 80 *per cent of all the fires occurring in the United States are preventable.*

The 1922 Program

Generally speaking, the 1922 campaign is divided into five separate and distinct campaigns, namely:

"Let's Clean 'Er Up" Campaign, running from April 3 to April 29
Fire Resistant Roof Campaign, April 12 to May 13
City Beautification Campaign, May and June, closing with the awarding of prizes on June 15
Clean-up and Fire Prevention Publicity Campaign, October 2 to October 16
No Accident, No Fire Week, November 1 to November 8

After mapping out the 1922 fire prevention program, we received a pledge of active cooperation from the new city administration, and the Mayor, and every department of his administration, are giving unqualified cooperation. The City Council appropriated funds to carry on the campaign, and the program was launched with the assurance of city-wide support. We distributed a large amount of "Let's Clean 'Er Up" literature, and the newspapers gave much space. As a result, our city has experienced the best clean-up in its history, and inspectors from the Fire and Police Departments inform us that they are finding it necessary to serve but very few official clean-up notices.

Prohibit the Shingle Roof

During the months of January and February of this year, the city had occasion to realize the absolute necessity of the elimination of the shingle roof, which, according to the Fire Chief, is our greatest fire hazard. We have approximately 60,000 buildings covered with wooden shingle roofs, and during the first two months of this year there were 850 shingle roof fires, the maximum number for any one day being on February 16, when there were 63 fires, every one of which was due to a defective flue or to sparks on a shingle roof. We have a city ordinance which prohibits the use of wooden shingles on new buildings, and provides further that if 50 per cent of a roof is damaged, the entire roof must be replaced with a fire-resistant roof. This ordinance, however, fails to specify a time when all shingle roofs must be replaced with fire-resistant roofs, and the change is therefore very slow. A great many cities have rigid ordinances in reference to shingle roofs, and the value of these ordinances will be realized when we compare our record of more than 1,200 shingle roof fires in 1920 with the record of New Orleans, where there were 24; Cincinnati, 56. Louisville, 110; St. Paul, 99, and Philadelphia, 110. We held a large number of conferences with the Indianapolis roofers and explained to them that if the campaign to eliminate the wooden shingle roofs was successful, it would be because of the cooperation of the roofers, and that in order to cooperate it would be necessary for them to do three things:

1. Educate the public to the fact that good roofing is an asset, whereas inferior roofing is a liability
2. Put on good roofing at a fair price
3. Put on good roofing on the payment plan

Practically all the roofers are cooperating in a fine way and have assured us that they will do everything in their power to further this program. Some publicity was carried in the papers in the latter part of March in reference to the absolute necessity of eliminating the wooden shingle, and we prepared to launch a strenuous campaign from April 12 to May 10. The public, however, beat us to the proposition, and roofers in Indianapolis have all the work which they can possibly handle for some time. The Building Commissioner is issuing from 35 to 60 re-roofing permits every day.

Replacing Rubbish Piles with Gardens

A city beautification campaign is being arranged, on the theory that if a rubbish pile can be replaced with a flower-bed or vegetable garden, there will not be much liability of another rubbish pile growing on or near that place. In other words, we hope to make a geranium or tomato grow where rubbish formerly flourished. An organization is being perfected in every ward, with two chairmen, a man and a woman, and 200 or more ward workers. The plans contemplate a yard beautification contest with fifteen or more prizes for each ward and 800 certificates of merit to be distributed throughout the city. Approximately one-half of the prizes and certificates of merit will be awarded for the best yards, and an equal number for the yards showing the greatest improvement. In addition to the ward prizes, there will be 15 to 25 major prizes to be awarded by the Mayor for the most beautiful lawns and premises in the city. We are availing ourselves of the services of the Park Department, City Planning Commission, Board of Sanitary Commissioners, all of which have to do with the general appearance of the city.

The Committee on Laws and Ordinances is giving careful attention to the preparation of a city ordinance making rigid provisions for the elimination of the shingle roof, and is also preparing a bill for presentation to the next Legislature, covering personal liability for preventable fires. We are just beginning to realize the length and breadth of a fire prevention program, and our experience indicates that it achieves the following results for a city:

1. Makes for better health conditions through the instrumentality of clean-up programs
2. Decreases fire loss
3. Decreases the loss of life due to fire
4. Is essentially a Safety First Campaign
5. Makes a city beautiful through the elimination of rubbish piles, dilapidated buildings and other fire hazards
6. Makes better American citizens

The Parable of the Three Roads

Why Adequate Plant Inspection Is Necessary to Insure Good Bituminous Roads

By Francis P. Smith
Consulting Paving Engineer, New York City

LET us assume, for the minute, that we are in the position of an engineer who has not specialized in bituminous construction. Certain contracts have been let in his district for asphalt pavements. His appropriation is more or less limited and perhaps he is doubtful as to the real necessity for plant inspection. After the foundation has been laid and is ready for the bituminous top, he visits the plant. He finds it in operation, apparently running all right, the batches being turned out and the sand assembled and fed to the dryers; the trucks are leaving with fair regularity and the mixture looks all right. It is black and the sand seems to be fairly well coated. He takes a sample from the load and tests the temperature and finds it comes within the limits of the specification requirements.

From there he goes to the road, where he finds the trucks delivering the hot asphaltic mixture. It is being shoveled, spread and rolled in good workmanlike manner, and he comes back to his office and thinks: "What real necessity is there for an inspector at the plant? Everything seems to be going all right, and why visit the plant more than once a day and the street occasionally? Why is not that sufficient?" And so he lets it go at that, and if he is fortunate enough to get a good pavement, he is liable to come to the conclusion that plant inspection is not a necessity, but a more or less expensive luxury which can be omitted when appropriations are scanty.

There is another side to the question, however, and as I firmly believe it true that we learn more from our own failures and mistakes than from any other source, I am going to cite certain failures which were wholly due to inadequate inspection, as possibly the best way of emphasizing the point.

Fortunately for my illustration, within the last three years three failures of bituminous pavement have come to my attention. In all these cases it happened that I was entirely familiar with the circumstances attending their construction, the kind of materials used, and the personnel of the contractor and the engineers under whose direction the pavements were laid.

In the first case the engineer decided to limit his inspection to daily visits to the plant and street, supplemented by a daily analysis of a sample taken when he visited the street. Instead of a complete analysis, he determined the bitumen content only, on the theory that the amount of asphalt that went into a bituminous road was one of the most important elements to check up, and that as the asphalt was the most expensive ingredient of the pavement, he would be more likely to find a shortage there than in any other constituent. In this instance he was drawing on his experience in concrete construction work.

In the second case the engineer decided against complete inspection, but he or one of his assistants took a daily sample of the mixture and had a complete analysis made of it.

In the third case the engineer was convinced of the necessity of plant inspection and he assigned a good inspector to cover the plant and had daily complete analyses made of the mixture, but he thought the street gang could get along all right.

In the first case a single sand was used and this sand had been examined carefully and approved as suitable for the construction of a sheet asphalt pavement. In the second case two approved sands were used and they were supposedly mixed in the proportions designated by the engineer. In the third case only one sand was used, there was practically no street inspection, and the street gang was composed of unskilled and incompetent men. Still keeping the preliminary conditions in mind, let us inspect these roads after they have been completed and subjected to traffic for various periods of time.

The First Road—Skimping on Bitumen

In the case of the first road, the time will be four months. We find a small portion of it in excellent condition, a part of the remaining portion is scaling badly, and the rest of the pavement is both wavy and scaly. What really happened was this: An examination of the pavement from the different portions of the street showed very clearly that the portions of the pavement which were in fairly good condition carried about the normal percentage of bituminous material. The portions of the pavement that were scaling, instead of carrying between 10.5 and 11.5 per cent bitumen, carried on the average only 8.5 per cent. The portion which was "shoving" had about 9 per cent of bitumen. The analyses of this pavement made by the engineer all showed a bitumen content running between 10 and 11 per cent. These samples were taken by the engineer on his daily visits to the street. It developed on further investigation that, owing to the pressure of other work, the engineer regularly paid a visit to the street between 10 and 11 every morning. Therefore, the men at the plant and the men on the street, after that visit between 10 and 11, knew there would be no further visits made that day and no other samples would be taken for analysis. It was very easy, therefore, for them to run during the early portion of the day a mixture which contained the normal percentage of bitumen, regardless of what they did afterward.

It was also the case in this particular pavement that the contractor to whom the job was awarded was a man who had had a good deal of experience in public work, a man who stood very well with the administration, but this was his first attempt to lay a bituminous pavement. He was brought up in a school where anything to increase the output of the work could very often be gotten away with, and such methods often did not seriously damage the final result; being ignorant, he had to rely on the advice of the men he had hired for the job on the street and at the plant. They tried to make a low cost record for themselves by saving asphalt when they thought it would not be detected, and by speeding up the plant. The deficiency in bitumen was one of the causes for the failure. Another cause was the fact that the pavement was insufficiently compressed, the rolling was done superficially, and the finished pavement had a density of between 1.85 and 1.89, which is much too low. An examination of certain portions of the pavement which were defective showed that not only was the bitumen content low, but the grains of sand were insufficiently coated. That led to an investigation of the record as to the daily output of the plant.

The plant had an ordinary 9-cubic-yard mixer which turned out a batch of 1,000 pounds of material. The specifications, backed up by the requirements of good practice, called for at least one minute's mixing in the mixer, the revolutions of the shafts between 60 and 80 per minute. An experienced mixing crew, trained to the last minute and entirely competent, can probably turn out one batch of mixture every minute and 20 seconds and give a full minute's mixing to each batch. An exceptionally well-trained crew can, throughout the day, average one batch in 1 minute and 30 seconds. Giving the contractor the benefit of the doubt and assuming his crew to be an exceptional one, that would make 40 batches an hour. A thousand-pound batch will lay 5 square yards of 2-inch pavement, so the maximum output which could be allowed to a contractor doing his work properly and giving it the required time of mixing, would be 200 square yards per hour. In this particular case the work was prosecuted with a 9-hour plant day. That gives us 1,800 square yards per day as the maximum output for that plant.

We found on investigating the records that 2,500 or 2,800, and even as high as 3,000 square yards had been laid per diem, which meant that the mixing was cut fully in half. That accounted for the insufficient coating of the sand grains, and, combined with the lack of rolling and the low percentage of bitumen, accounted entirely and wholly for the failure of that pavement in four months. The traffic on that road was heavy. The foundation was of concrete 8 inches thick, and the subsoil was properly drained. There was no question of improper foundation or improper drainage. Further investigations involving a pretty close approximation of the daily amounts laid and their relative service records after the four months showed, in those cases where it was possible to trace them—which was about 30 per cent of the time—that the pavement laid in the period from early morning up to 11 o'clock has given very good satisfaction. That illustrates as plainly as words can tell what took place after the engineer had paid his daily visit and the contractor felt himself freed from further supervision for the remainder of the day.

An inspector at the plant would have verified the weights of the mixture. He would have verified the time allotted to mixing. He would not have permitted them to reduce it, and the mixture sent to the street would have been of uniform bitumen content, and his temperatures would have been properly maintained. The cost of that inspector at the plant weighed against the indirect cost to the city through the inconvenience to the public while taking up and replacing that pavement, and the cost of a new pavement, which will fall directly on the contractor, would have paid for ten inspectors at the plant ten times over.

The Second Road—Mixing Two Sands

Now let us visit the second road. In this road two sands were used, one a coarse sand, and one a fine sand. In the fine sand the particles were almost wholly composed of quartz. They were very sharp and had rough surfaces to which bitumen adhered well. The coarse sand was partly rounded, and if used by itself would not have made a stable mixture. It was, however, the only coarse sand available in that location at anything like a reasonable cost, and not more than 33 per cent of it was required in the mixture. A mixture made according to these proportions would have had sufficient stability and would be in all respects an excellent mixture. In this case, you will remember, daily samples were taken by the engineer on the street, and the analysis that was made involved only the bitumen contents. The contractor was a man who had had very considerable experience in the laying of sheet asphalt, a man of high business honor and integrity, and he tried honestly to lay the best pavement he knew how. The plant foreman was very good in some respects, but slack in one particular. That one particular was fatal. Two years after that street was laid, possibly one-half of the pavement was in good condition and the remainder was waving badly. The cause for the defective portions of the pavement was clearly traced to lack of care in the mixing of the sands. The established proportion for the sands was two of fine to one of coarse.

If you have had experience with asphalt plants, especially at the start of a piece of work, you will realize how very difficult it is to get men to keep their coarse sand piles separate from the fine sand piles and to establish a system whereby the sands will be mixed in the right proportion. In this particular case the coarse sand was very much cheaper than the fine. The plant foreman, thinking to do his employer a good turn and reduce the cost of laying the pavement, tried to use all of the coarse sand possible. That policy was carried so far that possibly one-half of this pavement was laid with all coarse sand and no fine sand in it. The analyses showed that the bitumen content of that pavement ran uniform. The men on the mixer did their duty, using the same amount of sand and the same amount of filler; they kept the mixture uniform in these respects, and the engineer congratulated himself that this pavement was more uniform than the average, and he expected the best results from it.

When we have a pavement with a given bitumen content composed of a large aggregate, we have one in which the surface is more thickly covered with bitumen than in a pavement of the same bitumen content which is composed of a fine aggregate. In this particular case, when using the coarse sand alone, the mixture containing 10.5 per cent bitumen probably carried over 1 per cent excess of bitumen, which was further aggravated by the fact that the rounded grains had a comparatively smooth surface. The result was a pavement which markedly lacked stability, and under heavy traffic it became wavy and shoved badly. In this case, the entire failure was due to not mixing the sands properly. An inspector at the plant who was competent and faithful would have kept an eye continually upon the men who were feeding the sand to the drum, and would have seen that the coarse and the fine sands were mixed in the proper proportion. Had he done so, that failure would not have occurred, thus saving much trouble.

The Third Highway—Density Not Uniform

In the case of the third highway, which, again, was a main trunk line route, it also had a 6-inch concrete foundation and a subgrade more than ordinarily well-drained, and only one sand was used. An inspector who was in every way competent was present at the plant. The analyses were complete and showed a mixture with a variation that was well within the average limits of departure from the standards set by the specification. In other words, the mixture was better than the average. The portions of the road that were laid in the early part of the season showed at the end of two years a very decidedly wavy condition. Portions of the road which were laid toward the latter part of the season were as perfect at the end of two years as on the day they were laid, if not better. Here was a case where the mixture was not at fault, but what happened was this:

In the early season the contractor had difficulty in getting a competent gang for the street. He had a poor roller man. He also had a four-mile haul from the plant, and the men who shoveled the material after it was dumped from the wagon were untrained, and rakers and shovelers trampled upon the mixture while it was being spread. Complaint of that very condition was made to the engineer having charge of the work, but it appeared to be somewhat of a hardship to the contractor to expect him at the very start of the season to have a gang that was well-trained and would fall into their places as they should. So, for a period of thirty days, workmanship on the street was tolerated which was not in accordance with the best practice, but which would, possibly in 50 out of 100 cases, have resulted in an entirely satisfactory pavement. As is always the case, those portions of the street where the mixture had not been properly raked and fluffed up, contained places where the density of the pavement was greater than those parts immediately adjacent thereto, and when the roller passed over them there was left a pavement which did not have the same density throughout. The compression exerted by a heavy truck is greatly in excess of that which can be obtained with a steam roller, and the concentrated traffic on that particular road found those spots that were less dense than others and began to depress them. Under modern motor traffic a depression once started quickly grows and gives rise to other depressions, until a series of waves is formed, with disastrous results which are familiar to us all.

Safety Dependent on Inspection

The three roads in question were paved with sheet asphalt with 1½ inches of binder course and 1½ inches of surface mixture. In a normal sheet asphalt mixture, a total variation of 1½ per cent from the standard bitumen content desired is not necessarily fatal to the road or even extremely detrimental, so that with this type of pavement a certain amount of inaccuracy in weighing the ingredients can be tolerated without specially bad results. But in a great many sections of this country they lay what has been called Topeka mix, which is more or less of a hybrid. It was originally a sheet asphalt mixture containing a small percentage of stone, small enough in quantity and size to avoid the Warren Brothers' patents. The Warren Brothers had really covered the best possible grading for a coarse mineral aggregate in a bituminous pavement. There has been objection to laying a patented pavement, and in order to get around that, they tried to lay this pavement which had only a small amount of stone in it. A great deal of this kind of pavement has been laid. Some of it has given very good results. In some cases its use has been justified by the fact that stone is cheaper than sand; the more stone, the cheaper the aggregate will be and the less will be the amount of bitumen required, and, therefore, a considerable reduction in the cost of the pavement will be effected. The limit of variation in bitumen contents permissible in a Topeka mixture is, however, very much smaller than that which is permissible in a sheet asphalt mixture; therefore, more careful watching is required on the part of the platform mixing gang, and greater accuracy in the weighing of the asphalt and the other ingredients of the batch.

When you think of men in a cloud of dust that at times is almost unbreathable, turning out 40 batches an hour all day long, one wonders that they do as good work as they do, and it also becomes a matter of wonder how an engineer, having in charge a pavement involving 40 batches an hour separately weighed, could possibly go on without an adequate plant inspector and yet feel that the safety of the project was reasonably insured.

Temperature of Batch

There is another point I should like to discuss, which was not involved in the case of these three roads mentioned, in order to illustrate another vital reason why an inspector should always be present at the bituminous mixing plant, and that is, the question of temperature. A test of the temperature of the mixture as it leaves the plant or as it reaches the street is not sufficient. In making the mixture we have two elements which are heated, the mineral aggregate and the asphalt cement. If we overheat the mineral aggregate and have a cool asphalt cement, we have in the finished product a mixture which will come within the requirements of temperature, but we shall have injured the mixture, because the mineral particles carry only a very thin film of bitumen and, if heated beyond the danger point, this thin film of bitumen will harden very rapidly. If, on the other hand, the sand or stone has been saturated with moisture by heavy rains, the capacity of the drum for drying and heating the mineral aggregate will be reduced. Under such conditions, a foreman anxious to turn out a large output is tempted to overheat his asphalt to offset the low temperature of his heated aggregate, thus increasing the amount of mixture of normal temperature delivered by the plant. Such a mixture will be defective owing to undue hardening of the asphalt in the kettles, and the bond between the bitumen and the sand will probably be weak.

Selecting the Sand

In many cases, sand, which forms 75 per cent or more of a sheet asphalt pavement, is obtained from large pits that are operated by experienced men, and they deliver a uniform supply which requires very little inspection to insure the use of suitable sand in the mixture. In other cases, the contractor frequently opens up his own sand-pit. Oftentimes stripping is required, and the face of the sand-pit is found stratified, fine and coarse. Sometimes it is necessary to discard a layer 2 or possibly 3 feet deep at the top in order to get a proper grading for the mineral aggregate. The contractor hires teamsters and places a man at the pit with a scraper, and he instructs these teamsters to go to a certain portion of the pit and take the sand from there. The local teamster knows that the more loads he gets the better he will be paid, and he takes the sand from the easiest or nearest part of the pit. The consequences are that half the loads should have been rejected. In other cases, where coarse and fine sands are mixed, it is very difficult to get the contractor to keep the sands separate. The drivers are careless and dump fine sand on the coarse pile, and vice versa, and there is no possible way of separating and grading the sands properly. The consequence is that the mineral aggregate varies so much that it does not come within the limit of the specifications or good practice, and, even if it does happen to fall within those limits, the variation is still so great that in order to secure the best results, the bitumen content should be varied. This it is impossible to do satisfactorily.

The aphalt cement in former days used to be made at the plant by fluxing a hard asphalt, but to-day most of the large asphalt manufacturers send tank cars that are tested, either before they leave the plant or on delivery. The variations in penetration are very trifling and do not require to be tested more than once per tank car delivery, instead of once for every kettle filled at the plant, unless the contents of the kettles are kept under heat for a very long time.

ACKNOWLEDGMENT.—From a paper read at the Eighth Annual Conference on Highway Engineering at the University of Michigan.

Maintenance Cost of Brick Roads

It cost the state of Illinois, in 1919, $42.63 a mile to maintain 86.9 miles of brick highways, exclusive of roadside up-keep. Including this item, the total cost per mile for brick was $118.79, compared with $149.86 for another type and $334.80 per mile for a third. Gravel and earth roads are not included.

Milwaukee County Police Abolish Speed Traps

By J. B. Scott

THE motor-cycle police of Milwaukee County, Wis., have set a splendid example to other motor-cycle organizations throughout the country by appearing upon the county highways in full police uniform. Furthermore, they officiate in a manner which adequately informs all motorists that they are motor-cycle police and not operators of speed traps awaiting the unwary motorist who chances to infringe on the speed laws of their vicinity. This is in accordance with the principles laid down by the County Sheriff, Patrick McManus, at the beginning of the 1922 motoring season. This movement on the part of Milwaukee County should be copied by all counties in the United States where motor-cycle police are employed in any way whatsoever. Some of the big cities have tried out the idea in their city police squads and have found it to be the very best method of law enforcement.

After all is said and done, prevention is better than prosecution, and primarily this is the reason for the change of tactics in the Milwaukee county police. Sheriff McManus states that it is his belief that law and order on the road can be better preserved by having his men operate as officials and not in the guise of plain-clothes men.

There are many county and state police organizations throughout the country that act in a manner unbecoming public officials. They not only lie in wait for the unsuspecting speeder, but do everything in their power to prepare the way for speeding. The reason for doing this is very evident. Their salary in many cases is contingent upon the number of arrests they make, and naturally they are going to make as many as they can. This last is particularly true of certain cities wherein the speed cops officiate only on Saturday and Sunday and exact a weekly revenue from tourists chancing to come their way.

Judging from the number of complaints registered, the season of 1921 was a banner year for this type of unscrupulous police. Naturally, tourist traffic means much to any state or city of the Union, both in the way of national advertising and in cold cash spent in that particular state or city. Also motor-cycle police operating under a disguise without uniform or badge are a detriment and a sure cause for failure of any state or city advancement plans so far as the tourist is concerned.

The method suggested is the only safe and sane method of eliminating speed. A uniformed motor-cycle policeman patrolling a road will do more to stop speeding than ten motor cops hiding in ambush waiting for the speed demons to rush by and then rushing after them.

Motor-cycle Police to Welcome Visitors

A very appropriate suggestion has been made, that each motor-cycle policeman be allowed to officiate as a committee of one to greet all visitors to the community. Virtually every community caters to tourist trade in some degree. Instead of pouncing upon them and arresting them upon the slightest provocation, have the motor police welcome them to the community, state the regulations enforced there, acquaint the visitors with the places of interest and furnish any information desired. A hearty welcome has never injured anyone, particularly the party doing the welcoming. With this system in vogue throughout the country, the communities represented will have gained another step toward their goal—the making of the particular community a tourists' paradise, not only from the standpoint of natural beauty, but of courtesy and hospitality.

The road builder who tries to "pave with good intentions" has engaged in the contracting business in the wrong locality. —*Highway News Digest.*

East Cleveland Street Lighting Combines Good Appearance and Effective Illumination

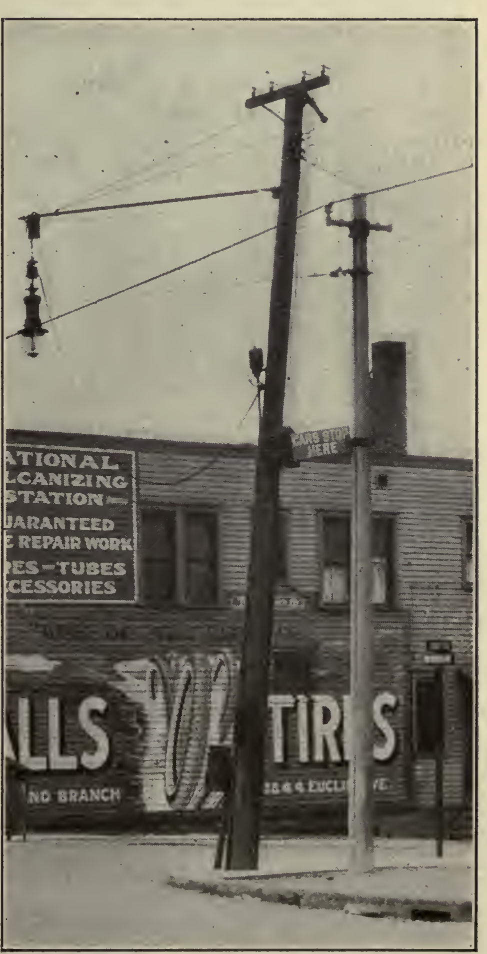
By C. M. Osborn
City Manager, East Cleveland, Ohio

THE circumstances leading up to the installation of a new electric street lighting system in East Cleveland were no different from those arising in other cities, particularly during the past decade. Motor vehicle traffic had increased tremendously with a corresponding increase in the accident hazard, many new residential districts had been opened, and finally, civic pride demanded a lighting system which would be on a par with other improvements of which the city boasted. The lighting system must, therefore, satisfy two general requirements—utility and beauty.

Unlike the ordinary city of its size, East Cleveland has no centralized business district which would seem to require the usual "white way" system; numerous small neighborhood shopping districts are scattered throughout the city. Euclid Avenue, a continuation of one of the principal streets in Cleveland, traverses the entire length of the suburb and acts as a main artery to the larger city. Other thoroughfares of somewhat less importance are also found leading off into state and county highways. Intermediary streets of a residential character connect the thoroughfares and, peculiarly enough, most of them do not follow through as street intersections, but simply lead into the thoroughfares. For the purposes of lighting, two classes of streets are therefore established—thoroughfares, and others almost entirely residential. The foregoing is given as having a bearing both on the location of lighting units and the amount of light supplied.

Locating the Units

The location of lighting units was made with particular attention to definitely establishing the point where the residential street leads into the thoroughfare. Records of traffic accidents showed that the hazards at such locations were especially great. Therefore, a lighting unit on the thoroughfare is placed on the side of the street directly opposite the end of the residential street. This arrangement not only marks the thoroughfare for the approaching



ARC LAMPS SUSPENDED FROM MAST ARMS WERE USED PRIOR TO THE PRESENT INSTALLATION motorist, but also affords him ample light for turning into the heavier traffic.

There are in use in the new system approximately 900 incandescent lamps. On Euclid Avenue 93 1,000-c.p. lamps are used, spaced approximately 140 feet apart. On the minor thoroughfares, depending upon the amount of traffic to which the street is subjected, 400- and 250-c.p. lamps are used on a spacing of about 200 feet. In the residential district 150-watt (approximately 200-c.p.) multiple lamps are employed, staggered and spaced about 200 feet between units.

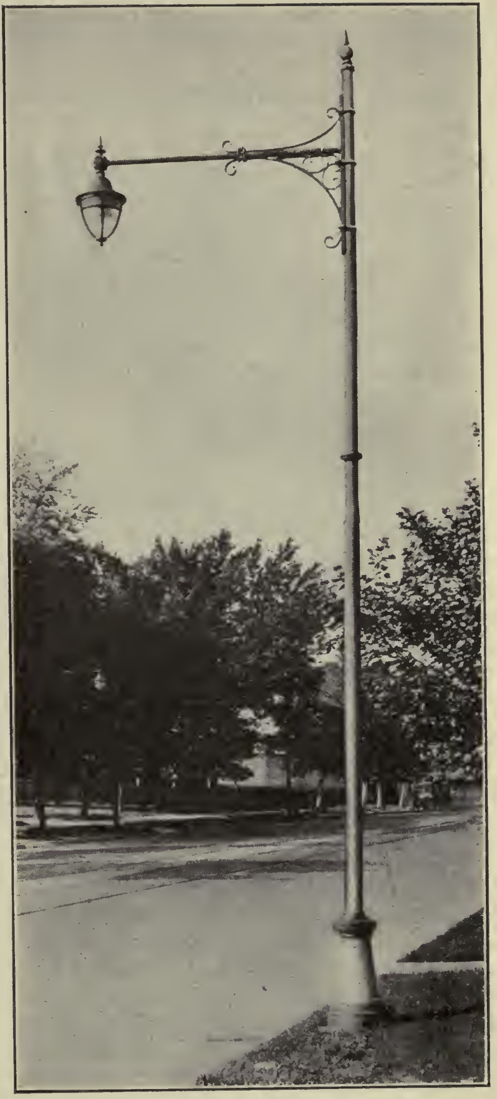
The staggered arrangement with units on both sides of the street was adopted for both the thoroughfares and the residential streets, for it soon developed that it would be practically impossible, particularly in the case of the wide thoroughfares, to properly light such streets with only one row of lamps. With two rows of units, each side of the street is lighted, in effect, as a single street of half-width. The staggered feature is especially effective in lighting for the benefit of pedestrians, since a part of the light from any given units is directed across the street to the area of comparatively low illumination midway between units on that side. Furthermore, by bringing the light to any point from several directions the staggered system very materially reduces shadows from trees and other objects, thus preventing dark hiding-places.

It is a well-recognized fact that the wood pole and mast arm bringing the light source out over the street surface has been very satisfactory from the standpoint of lighting efficiency. Its appearance, however, with its dangling wires, has always been offensive to the eye, particularly on a well-kept street. On the other hand, the usual ornamental standard, about 10 feet in height with opal globe, is made up in a pleasing design, but its efficiency is comparatively low, for fully as much light goes upward as is directed to the street. The East Cleveland lantern with its ornamental standard and bracket arm, mounted at a minimum height of 16 feet, is a decided departure from anything so far designed in residence street lighting equipment, for it actually combines high efficiency and favorable appearance. The greater height proportionately increases the spread of illumination from each lamp and makes possible the same uniformity of lighting with fewer units than are necessary with low mounting heights. Furthermore, the lamps are removed from the ordinary line of vision, and the glare effect so often found in units at lower heights is eliminated. The liberal length of bracket arm brings the unit out so that it clears the tree foliage. As a result, even at a height of 16 feet, the interference from tree foliage becomes less than where short, upright posts are used in an attempt to keep the lighting units below the tree foliage. The appearance of the ornamental lamp standard can be judged from the photograph, and some idea of its efficiency as compared with the upright standard and opal globe can be gained from the diagram.

For the principal thoroughfares, the bracket arm extends 6 feet out from the supporting post, and the lamp is mounted at a height of 20 feet above the surface of the street. For the streets of a residential character, a smaller standard is utilized which brings the lamp 16 feet above the street with a 4½-foot bracket arm. The standards and brackets were furnished by the Union Metal Manufacturing Company, Canton, Ohio.

Except where there are levels of illumination of the order of those used in white way street lighting, considerable dependence must be placed upon seeing objects in the street at night by silhouette effect; that is, objects which are not in themselves lighted brightly enough to be easily seen are likely to be revealed as dark silhouettes against brightly lighted areas beyond, such as the spots of light beneath the street lamps. However, these bright spots of diffuse reflection are not found in the case of streets subjected to heavy continuous traffic, where the pavement soon acquires a black polish from the action of the tires and the oil from engine exhausts. On streets in this condition, or on any paved street that is wet, the bright spots beneath the street lamps practically disappear and the rays from the street lamps are spectacularly reflected by the surface, forming paths of brightness or glint from the pavement. From the nature of this glint effect, it is not possible to develop a sheen covering the entire pavement of a wide street from a single row of lamps. However, with a bracket system having lamps on each side of the street, spaced not too widely, these paths of light or glint merge into one broad strip, giving a sheen of brightness covering practically the entire pavement and producing thereby a bright background against which objects may be seen in their true outline with such distinctness that an automobile driver may readily locate them and estimate their rate of speed and direction of travel. The bracket arm has the further advantage that by bringing the lantern out over the street surface the vertical faces of the curbstones are lighted on both sides of the street, and the street boundaries are well defined.

The Novalux lighting unit of the lantern type construction was developed for East Cleveland and is manufactured by the General Electric Company. One of the most desirable features of its construction is the fact that the whole unit is entirely enclosed. The joint between the globe and canopy is formed by a tight felt seating. This insures the absence of the usual collection of bugs and dirt found in many fixtures of this general type. A Holophane prismatic glass refractor is seen surrounding the lamp bulb. This serves to direct the upward light from the lamp downward, and fully 50 per cent more light is made useful on the surface of the street than would be the case with the ordinary opal ball. Less light is of course directed to the porches and upper windows on residence streets, thus alleviating the discomfort often experienced where no attempt has been made to direct the light to useful directions. The lamp and refractor are totally enclosed by an acorn-shaped globe made of rippled glass, which gives the unit a live, sparkling appearance. The globe merely spreads and softens the light rays and does not materially affect their direction. The function of the rippling on the globe can be likened to that of the nozzle on a hose, which breaks up the solid stream of water into a softened yet well-directed spray. This outer globe is held in a basket of copper bands. In the case of a broken globe the basket obviates the danger from falling glass. When the unit is lighted, these bands give the globe a definite shape and prevent the impression of a bright spot of light shading off indefinitely into space.



THE EAST CLEVELAND STANDARD AND LANTERN

The illumination results effected by the new system may be briefly summarized as follows: The illumination on the thoroughfares is such that it will enable an automobile driver moving at a rapid rate of speed to easily see a grown person or child in the street or about to step from the curb into the street. Small obstructions or depressions in the street are plainly visible. The direction and rate of speed of other vehicles can easily be judged. Passengers are able to quickly gage their footing in getting on or off street cars, and it is possible to read written addresses at any point on the street.

On the residence streets on which there

is no great amount of through traffic, the requirements are somewhat less exacting, and therefore a somewhat lower level of illumination was considered adequate. Obstructions or serious breaks in the pavement, or children playing in the street, can readily be seen by an automobile driver when going at a fair rate of speed. Turns, dead-ends, and street intersections are definitely marked. The illumination shows inequalities in sidewalks, eliminates heavy tree shadows, and reveals street signs and house numbers. Enough light is provided on the front lawns and between houses to avoid dark hiding-places.

Unique Power Circuit

An unusual innovation found in the new East Cleveland street lighting system is that all lamps in the residential districts are fed from the house lighting circuits which run along the rear lot lines. The common practise in the past has been to install a separate and distinct series system for street-lighting current distribution, controlled from the power-station. Such a system in the residential parts of East Cleveland, if installed underground in the usual way, would have necessitated the digging of curb-line trenches which would have run fully 200 feet for each lighting unit. The cost would have been further increased where concrete driveways were encountered, and the pavement would have been torn up to reach the lamps of the staggered system. Since the residence lots were only 130 feet deep, it is seen that a material saving was effected by simply making a trench run along the side lot lines to the street. Contrary to the misgivings expressed by a number of interested persons, little difficulty was encountered in securing easements for the underground construction of lines, since the property owners were fully convinced of the better appearance of the ornamental system with underground distribution as compared with the usual overhead wood pole line construction. With the multiple arrangement of distribution it was merely necessary to provide time switches for turning the lamps on and off. As many as ten lamps are controlled by one switch.

Practically all the wiring is placed underground for both thoroughfares and residential streets. Unsightly poles and overhead wires are therefore eliminated throughout the greater part of the city. This one feature has probably been the most popular of any in the system, and as far as the appearance of city streets is concerned it can be considered at least as important as the selection of a lighting standard and unit of pleasing design. Because of the large economies effected by the utilization of the multiple house-lighting circuits to supply energy, and the resultant practice of low-voltage underground distribution along the lot lines with inexpensive cables and short runs, the total cost was but little more than that estimated for an overhead series system.

Cost figures on street lighting systems are likely to be misleading because of the variance in conditions encountered in different localities. In East Cleveland the total cost of the installation amounted to approximately $100,000. The cost of the new system to the city will be about $45,000 per year, including cost of energy and maintenance, depreciation, and amortization charges. The illumination provided is practically five times that of the system it replaced, although the cost is only a little more than twice as great.

Acknowledgment is made to Messrs. Earl A. Anderson and O. F. Haas, illuminating engineers, Engineering Department, National Lamp Works, who acted in the capacity of designing and consulting engineers, and to the Cleveland Electric Illuminating Company for cooperation in working out the construction and operating programs for the new installation.

Top-Soil Road Construction in North Carolina

THE rational development of top-soil road construction in North Carolina is rapidly giving this state a system of improved highways. The roads are in good condition more than 11½ months in the year and they are economically durable for a traffic of between 400 and 800 vehicles per day. The top-soil roads cost about $7,000 per mile to construct and $400 per mile per year for maintenance. By resurfacing them at a cost of about $135 per mile once in three years, they can be virtually renewed. When the traveling capacity of these top-soil roads is exceeded, they provide remarkably good foundations for pavements of the hard-surface type.

Police and Fire Alarm Cable Circuits in Representative American Cities

Methods of Handling, Cost of Installation and Maintenance Vary Greatly

THE relative cost of installations of underground and overhead fire alarm and police circuits, the types of cables used, and the annual maintenance charges are naturally of interest to all superintendents of fire alarm and police services. Unfortunately, only a small amount of data is available on this important subject. It is of interest, however, to note the various methods employed in different cities in the East in the installation and maintenance of these circuits.

Baltimore, Md.

In Baltimore, Md., the Electrical Commission, organized on October 1, 1898, constructs underground conduits in order to enable the city to enforce in a systematic and positive manner the removal of old and overhead wires which infested its streets and thoroughfares. All corporations are required to occupy the conduits allotted to them upon the receipt of notice that provision for their accommodation has been completed. This does not apply, however, to the telephone company, which under its franchise has the right to build overhead or underground anywhere in the state. The fire alarm and police telegraph systems are entitled under the provisions of the franchise to have space in the conduits or positions on the poles of the telephone company when required. Municipal departments are provided with ducts in the conduits of the Electrical Commission and are required to occupy them and remove poles when notified by the Commission.

The cost of construction and maintenance of the fire alarm telegraph department of Baltimore goes into the general expense account without specific detail of purpose. An estimate of a particular branch of construction, either overhead or underground, which it is sometimes necessary to provide, is easily computed, figures being based on the cost of material and labor. An interesting description of Baltimore's underground conduit systems appears on pages 617-618 of the June, 1916, issue of THE AMERICAN CITY, and another in February, 1918, page 130.

Detroit, Mich.

The Detroit Fire Department has 290,000 feet of conduit, part clay and part fiber, which has cost an average of 75 cents per duct foot, the manholes costing about $75 each. The types of cables used are combination rubber and paper in one sheath, and rubber, lead-covered. The sizes vary from duplex to 100 pairs. The cost for 253,000 feet of cable was $146,483; 700 miles of 3 brd. W. P. copper wire cost $33,220; 3,786 poles cost $37,860, and the fixtures $9,566.

Harrisburg, Pa.

The overhead circuits of the Electrical Bureau of the city of Harrisburg, Pa., which operates under the Department of Public Safety, cover both fire alarm and police signal systems and run entirely on the poles of the public utility companies, so that the only cost to the city is that for wire and boxes. Underground cables are run entirely through the ducts of the several companies maintaining underground structures, a duct in each instance being assigned to the city by the utility in return for its franchise. The cost, therefore, in this instance is only for the cable and boxes and is dependent more particularly upon the size of the cable used. In overhead construction nothing but hard-drawn No. 10 copper wire with weather-proof insulation is used, while in the underground construction only rubber-insulated wire with lead sheeting is used.

Meriden, Conn.

The Superintendent of Signal Service of the Police Department, Meriden, Conn., reports that they do not keep exact records of the cost of aerial and underground construction, all of the work being done by the electrical department of the city. Underground cable is used jointly by the police and fire departments and is made according to the International Association of Municipal Electricians underground cable specifications, with the exception that they use a tape tracer instead of a ridge or fin on the rubber, because in the case of the fin marking it might be misconstrued as a machine mark left from manufacture. Some rubber-covered wire is run underground, being made the same as the wire in the cable, with the exception of having a slicked braid over-all and a 1/16-inch wall of rubber. This, however, is not advised and is used on only a few cross-connections, which should not be in use for any length of time.

Fire alarm aerial wire is No. 12 B & S gage, hard-drawn bare. Aerial police box circuits are No. 12 B & S triple braid weather-proof wire. Police recall or signaling circuits, such as gongs, horns, lights, etc., are Nos. 8 and 10 triple braid weather-proof wire. Recall underground cable is of the same construction as police and fire cable, except that the conductors are No. 12 gage. If it were not for the fact that poles are pretty closely spaced, Meriden would probably use nothing smaller than No. 10 for aerial lines. In that locality, however, No. 12 wire answers the purpose.

Niagara Falls

Niagara Falls, N. Y., has been installing fire alarm wire underground since 1913, using combination cable for fire and police wires in one duct of the New York Telephone Company, which is furnished free to the city. The cable is made up in accordance with the International Association of Municipal Electricians specifications, using solid No. 14 wire for fire and police signal and No. 18 twisted pairs for fire and police telephone systems, with conductors to care for the present and future demands in the sections of the city in which it is installed. The Telephone Company pulls and splices the cable at cost, and maintenance has cost nothing since the system was installed underground, with the exception of one defective sleeve, which was replaced. On January 1, 1922, the following cable was in service: 45,636 feet of cable containing 36½ miles of working fire alarm; 22½ miles of fire department telephone wire, and 46 working police signal and flashlight wires. There are 33 miles of No. 10 hard-drawn copper wire overhead for the fire alarm system, which is on a cross-arm furnished free by the Telephone Company. Six miles of wire is being added to the aerial system this year, and about 3,000 feet of cable to the underground system. Cable and wire are purchased each year by competitive bids, and no special record of cost of overhead circuits is kept, as all work is done by the City Electrician and the underground cost is the annual cost of new cables plus the work of pulling and splicing.

Rochester, N. Y.

The Bureau of Fire and Police Telegraph of Rochester, N. Y., uses hard-drawn copper wire of No. 10 gage for overhead construction. Underground cable is rubber-covered, lead-encased and No. 12 gage. In granting a franchise to the New York Telephone Company, the city of Rochester provided that it be given one duct wherever the Telephone Company ran underground and that the company also pipe to the first pole, so that a cable box can be placed and the line run overhead. The cost in this case is the price of the cable plus installation cost. No costs for installation have been kept. On a job just finished, two cable splicers and helpers pulled in 1,200 feet of No. 8 wire cable in two days, testing out the cable and splicing four joints. Where the Telephone Company has no underground conduits, the city builds its own subways, the digging being done by contract, which generally runs about 30 cents per foot, and the manholes at about $40 each. Creosote ducts are being installed this year. In the past, second-hand iron pipe has been used, but it did not prove satisfactory. Two cable splicers and two linemen are employed at salaries of $1,700 per year, and two helpers at $1,250 per year. In Rochester there is cable still in service and in very good condition which was installed 25 years ago. There have been a few cases of trouble with electrolysis in different parts of the city each year, and also trouble due to the men employed by the gas company, in looking for leaks, driving a needle through the cable, thus causing grounds.

Waterbury, Conn.

Only No. 14 gage cable is used in Waterbury, Conn. This cable has a 30 per cent Para rubber insulation, each conductor being plain with a tracer in each layer, jute-filled. It has a ⅛-inch lead wall with 3 per cent tin, and is tested to 4,000 volts and

2,500 megohms per mile. The estimated costs of cable are given in the table below:

150 conductor cable	$1.45 per foot
25 conductor cable	575 per M feet
20 conductor cable	500 per M feet
50 conductor cable	925 per M feet
100 conductor cable	1,250 per M feet
Fire alarm standards, cable boxes and terminals,	$125 each

The estimated cost of drawing in cable, splicing and connecting it is usually figured at 2 per cent of the total cost. Maintenance cost is handled as a special item and covers both line and underground service. The total annual maintenance cost is estimated at $1,500. Conduit cost is estimated at $300 per 100 yards of permanent pavement, and $450 per manhole.

Acknowledgment

We are indebted to the following superintendents of telegraph systems for the information recorded above: J. B. Yeakle, Superintendent of Fire Alarm Telegraph, Baltimore, Md.; Louis Gascoigne, Superintendent, Fire Alarm Telegraph, Detroit, Mich.; C. E. Diehl, City Electrician, Electrical Bureau, Department of Public Safety, Harrisburg, Pa.; Arthur E. Cook, Superintendent of Signal Service, Police Department, Meriden, Conn.; M. J. Donohue, City Electrician, Niagara Falls, N. Y.; Lafayette G. Akey, Superintendent, Bureau of Fire and Police Telegraph, Rochester, N. Y.; Charles K. Ahearn, Superintendent, Bureau of Fire Alarm Telegraph, Waterbury, Conn.

Testing Increases City Power-Plant Efficiency

By W. M. Gray

Commissioner of Public Utilities, Chanute, Kans.

NEARLY two years ago it was decided by the Commissioners of Chanute, Kans., that it would be inadvisable to postpone or defer a radical overhauling and enlargement of the municipal electric light plant. The engines and boilers were badly overloaded, the engine room was small and already crowded with the two small units operating at that time. The building was also in bad condition and it was not feasible to repair it or to enlarge it. The best feature of the plant was the new boiler room, built the year before, and two 250-horse-power water tube boilers installed in the new section. Black & Veatch, consulting engineers, were called in, and investigated the situation very carefully, reporting to the Commission. It was decided to first construct a new building to properly house the old units and to provide space for the proposed new 625-kilovolt-ampere steam turbine, another 250-horse-power water tube boiler, a new spray pond and condenser, stokers and ash conveyors and accessories, which brought the total cost up to about $75,000.

This expenditure was approved at a subsequent bond election. With the money provided, the Commissioners were confronted with the task of wrecking one plant and rebuilding it and keeping up continuous operation at the same time. It was found to be no small job, but was finally carried through successfully. The problem was further complicated by the resignation of the very capable superintendent. The next appointee served only a few months.

When the $75,000 bond issue had been expended in improving the plant, there were three 250-horse-power boilers, two Casey-Hedges and one Heine, equipped with good stokers and ash conveyors. A new 625-kilovolt-ampere Allis-Chalmers steam turbine properly equipped with spray pond and condenser and all necessary auxiliaries, together with the two old units previously mentioned, were installed, and yet it was found that the service had not been improved. The cost, instead of decreasing, had actually increased. This was a condition which demanded immediate action. The services of the present plant superintendent, C. G. Bayles, were secured, and the situation was thoroughly canvassed.

The consulting engineers were again called in, and after numerous conferences it was decided that the leak in cost was in the boiler room. Mr. Bayles began to overhaul the boilers and boiler room to see why the results were not better. He found the boiler room ill-kept and loosely managed, the firemen fighting to keep three boilers going on a one-boiler load, unable to realize why they were securing such meager results at such enormous labor and expense.

The troubles were, in general, as follows: irregularity in the time of cleaning the boilers; careless inspection of boilers when down; seeming ignorance of the primary essentials of combustion engineering; and neglect in the use of proper recording instruments. The consumption of steam was in a similar unsatisfactory condition. No intelligent check on steam generation per kilowatt hour, very careless and unsystematic records of switchboard, and the same carelessness in the records of the vacuum or load conditions throughout the day were noted. So, in spite of a good boiler room and new equipment, great inefficiency was disclosed.

This was the condition in March, 1921, and no time was lost in applying the necessary correctives. The boilers were thoroughly cleaned and carefully inspected and have since been kept in the best condition that intelligent care and oversight can produce. Old recording instruments were brushed up and new ones were secured, the stack temperature carefully and regularly noted, drafts regulated, steam flow meters cleaned up and reconnected, and careful and regular records kept in connection with the turbine and condenser, as well as in the boiler room.

Investigation Produces Results

The results of this thorough housecleaning are that the entire load which formerly required three boilers is now carried very comfortably on one. The fuel cost has shown a steady decrease. For the first five months of 1921, from January to May, inclusive, the average cost was 2.36 cents per kilowatt hour. Since the time that the improvements were completed, the fuel cost has shown an even more gratifying decrease, dropping from 2.36 cents to an average of 1.05 cents per kilowatt hour, a saving of 1.31 cents per kilowatt, or a net saving of $9,417.63 for the three months, and approximately $28,000 for the year. The fuel cost of 0.92 cents in September, 1921, was the lowest recorded, and since then it has remained somewhere between 0.9 and 1 cent per kilowatt hour all the time. The following table is a comparison of the cost of production before and since the completion of new equipment:

	Fuel Cost	Output Kw. Hrs.	Cost per Kw. Hr.
January, 1921	$3,825.80	152,953	.025
February	2,784.00	136,594	.024
March	3,984.00	152,975	.026
April	3,708.00	145,316	.025
May	3,478.00	155,004	.022
June	2,210.27	161,564	.013
July	1,739.99	167,561	.010
August	1,826.02	195,195	.0093
September	1,792.72	194,583	.0092

NET SAVING IN FUEL ALONE

	Fuel	Output	Cost per Kw. Hr.
1921—1st five months	$17.279.80	741,942	.0236
1921—Next 4 months	7,569.00	718,903	.0105
			.0131

Net saving per kw. hr. on fuel	$ .0131
Net total for four months on fuel	9,417.63
Representing for one year total fuel saving	28,252.88

The plant is now using a recording flue gas meter, a recording steam gage, a recording and integrating steam flow meter, a feed-water temperature meter, and a stack temperature thermometer. Switchboard records are also kept, showing all the readings of the load, output, steam pressure, vacuum and voltage.

Further tests and records are being made, showing labor cost, maintenance and distribution. When these are completed, we shall be able to show in detail where we stand and what we are accomplishing for any given day, month or year. These tests are made simply for our own information and for guidance in the operation of the plant. This should be the aim of every municipal power-plant, as improvements which are properly conducted and checked are bound to show decreased operating costs and decreased depreciation. The saving in operating expense has shown a very gratifying improvement in net receipts and is being used for rebuilding the transmission rods. It is planned to install a new white way at an approximate cost of $20,000 to $25,000. This cost will be shared between the business men and the electric light plant, probably on a 50-50 basis.

New York Plans a Gigantic "Don't Get Hurt" Campaign

BELIEVING that Safety Weeks, desirable as they are, need constructive follow-up, the New York Public Safety Committee, of which Judge Elbert H. Gary is Chairman, has just announced plans for a great safety campaign starting with a Safety Week in October and followed by a continuous program for the succeeding twelve months. The slogan of the campaign will not be "Safety First" or "Be Careful," but the more specific warning, "Don't Get Hurt." According to L. V. Coleman, Director of the Safety Institute, Safety Weeks serve three purposes: first, they have demonstrated that safety is practicable by actually lowering the death rate for seven days—a well-managed week never fails to accomplish this result; second, such a week enlists the support of leaders in the community upon whose continued help lasting accident reduction must depend; third, a Safety Week gives publicity to the mechanism of the permanent program, and assures for it the serious attention which it deserves and must have in order to be successful.

The continuous program, of which the first week is but a start, is a complete innovation. Programs covering a shorter period have been demonstrated in other cities, but the year-round program especially adapted to New York is a result of careful studies which the Safety Institute has conducted during the past twelve months.

First in importance in teaching safety is the work in the public and parochial schools. One-half of all that has been done to promote safety has been done through school agencies, for not only is it possible to teach children to escape accidents, but it is known that the adult population gives more heed to messages brought home by the children than it does to those received through other channels. The New York program has already received the official endorsement of Dr. Ettinger, Superintendent of Schools.

The second feature is the school for automobile drivers to be conducted in separate classes in each of the five boroughs. The course, covering three months and repeated at short intervals, aims to instruct drivers in the careful operation of motor cars and to develop in them sympathy for the efforts of the police to control traffic.

Schools for foremen, who have shown themselves to be men who can control industrial accidents, will also be instituted. An Accident Statistics Bureau, to be established as a department of the Safety Institute, will assemble and interpret the facts.

Official approval has been given to the project, and the city officials whose departments come in contact with the work will assist in directing the program into the most effective channels. The press is already giving hearty cooperation.

From the Mayor of St. Peter, Minn.

TO THE EDITOR OF THE AMERICAN CITY MAGAZINE:

May I call your attention to an article which appeared in the June issue of your magazine entitled "What Are Women Mayors Doing?" in which you have made an error and which in my candidacy for Congress is working to my detriment.

You say, "Mrs. A. K. Gault of St. Peter was appointed by the City Council, all of whom were men, after the elected mayor refused to qualify."

Nothing could be farther from the truth!

The material for this write-up was given you through the courtesy of *The Woman Citizen* and just where the mistake crept in, I do not know.

As a matter of fact, I was waited upon some three months before the city election by men representing various business interests of the city and asked to become a candidate; after taking two weeks to consider the matter I consented.

My opponent was a former schoolmate, a resident of my ward, and had served the city acceptably as mayor some years ago. The contest was close, but I won.

I am sure a magazine of your standing will be only too glad to present the facts in the case.

I enclose a clipping from one of the papers in my district and copied into the home paper.

LILLIAN COX GAULT
(Mrs. A. K. Gault)

July 15, 1922.

You Can Say "Danger" Too Often

Danger Signs Should Be Used Only Where Danger Actually Exists

By A. R. Hirst

State Highway Engineer, Madison, Wis.

MUCH can be done to promote safety in the use of highways by the erection of proper signs at places which are really dangerous. All railroad crossings should, of course, be posted. Many states have uniform signs and uniform posting laws. The white circular disc with the two black division lines and the letters "R. R." is now practically standard. Inasmuch as its use is so general, it should be made universal. All sharp turns should be marked with signs, also schoolhouses, approaches to principal highway crossings, and all other places where the operator of a car should have it under full control. Dead ends and very sharp turns which are unavoidably present should be boarded across the ends with a white sign-board, with an arrow indicating the direction of the turn.

During road construction, green flags should be used by day and green lights by night to give warning of danger ahead. The actual point of danger should be red-flagged and red-lighted at the point of repair or replacement. A single red light at the point of replacement or repair is not sufficient on high-speed roads, because often these lights are mistaken for the rear lights of motor vehicles, and even when they are understood, the driver sometimes cannot stop before striking the obstruction. There has been too little use of caution signs well in advance of danger, and practise in this respect should be improved. In erecting signs indicating danger, care should be exercised that they are not erected where, in fact, no danger exists, because the constant passing of danger signs if no danger is later apparent makes the driver careless and has the effect of the cry of "Wolf, wolf!" and finally, when actual danger is encountered, disaster is likely to ensue.

Incident to the use of proper guiding and warning signs is the very advisable removal of all advertising signs along highways, especially those which interfere with vision. I belong to the cult which believes that our highways are no place for advertising. There are enough avenues of publicity open to those who wish to sell their goods without making our rural landscapes a futuristic nightmare. The total elimination of such signs is coming very fast, and this reform will probably do more to add beauty to our highways than any other single thing. If manufacturers understood that instead of adding to their trade, these signs undoubtedly serve to lessen it, the passing of the signs would be only a matter of a very few years—and they can be made to understand this by a proper campaign of education and warning.

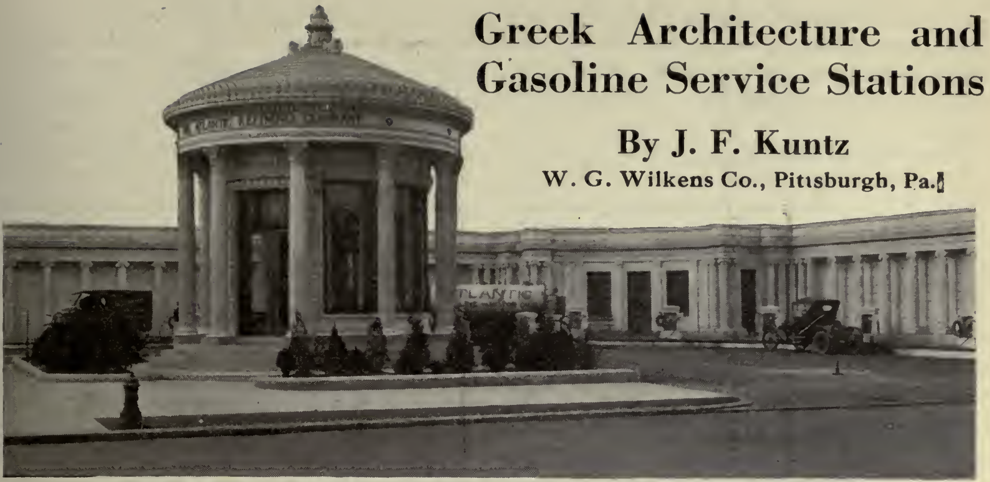
The division of roads and center marking, especially at curves, is a growing practise. Against this can be urged the objection that it serves to concentrate traffic too much and that it also keeps traffic constantly near the edge of the road slabs, thus increasing corner breaking. I feel that its expediency is very debatable on straight stretches of highway, but that on curves it should be universally used. The possibility of indicating turns, road intersections and approaching danger on the road surface itself has not been thoroughly worked out, but there are decided opportunities for advance along these lines. The good driver is always watching the road and can readily note such signs if they can be kept clearly marked.

1921 National Fire Loss $485,000,000

J. B. Morton, President of the National Board of Fire Underwriters, stated at the recent annual meeting of the Board, that although there was no single conflagration of any magnitude in 1921, the fire losses for that year in the United States probably would approximate $485,000,000. The Committee on Incendiarism and Arson reported that in the last fiscal year it investigated 832 fires, in connection with which 368 arrests have been made, 210 cases have been tried, with 159 convictions and 51 acquittals.

Greek Architecture and Gasoline Service Stations

By J. F. Kuntz
W. G. Wilkens Co., Pittsburgh, Pa.



A MODEL GASOLINE FILLING STATION OF THE ATLANTIC REFINING COMPANY IN PHILADELPHIA

A CASUAL survey of any of our large cities or small towns leads to the conclusion that many buildings of more or less prominence have apparently been designed by the hapless victims of some especially conspicuous form of mental aberration. The fact that this unfortunate condition is generally due to the short-sighted policy of the owner rather than to any misconception of true artistic values on the part of the architect, naturally points the way to a solution of the difficulty. Public-spirited citizens, working through civic clubs and city planning commissions, can arouse a spirit of cooperation and make an appeal to local pride that will result in a better conception of individual responsibility by each and every property holder.

The situation is unquestionably improving, from the architectural standpoint, and this statement is especially applicable to the various structures now being erected in connection with the automobile traffic. In an infant industry that grew to gigantic proportions almost over night, certain makeshift arrangements were inevitable in preparing to cater to a constantly expanding volume of trade. In consequence, our automobile highways have been dotted by nondescript buildings which offended the eye of the beholder, and possessed but one solitary attribute as a justification for their existence—utility. Like the bill-boards, these structures threatened to become a permanent blot upon the landscape.

Realizing the objections to such an unsightly growth, and desiring to forestall the criticisms which were bound to follow, The Atlantic Refining Company, of Pennsylvania, decided to make a radical departure from established precedent and erect a series of ornamental service stations that would minister to the needs of its customers and at the same time serve as an advertising medium for its product, combining the function of service and the quality of beauty in approximately equal proportions.

Situated at various points in the cities and villages and along the principal highways of Pennsylvania and New England, these beautiful little edifices delight the eye as well as they serve the public. The stations have all been designed by, and erected under the supervision of, The W. G. Wilkins Company, architects, of Pittsburgh, Pa. Constructed of terra cotta, in white or colors, in combination with tile and terra cotta roofs and ornamental plaster in harmonizing shades, they afford a wide variety of types and sizes, with special designs to suit individual locations and space requirements.

It is the consensus of opinion that the best of them is the station located at the intersection of 40th and Walnut Streets, Philadelphia. This dainty little edifice graces one of the most popular automobile roadways in the Quaker City, and daily caters to the wants of an ever-increasing throng of motorists. It is a reproduction, on an enlarged scale, of the monument to Lysicrates, still standing in Athens, and is surrounded on two sides by an Ionic colonnade, the details of which are taken from the Erechtheum, another classical survival located on the site where Pallas Athene waged war with Poseidon for the possession of her beloved city.

The building is constructed of dazzling white terra cotta, and its perfect proportions will linger long in the memory. This charming reproduction of one of the finest bits of Grecian architecture extant forms a striking contrast to the great majority of buildings erected for the purpose of supplying the wants of modern charioteers.

Cooperation in erecting buildings that are both practical and beautiful is the only effectual method of preventing architectural monstrosities and securing a proper appreciation of the necessity of applying esthetic interest to natural human needs in the building up of cities and towns. It is practical city beautification.

Lawn-Mowing Cost Affected by Species of Ornamental Trees

By L. S. Dickinson

Superintendent of Grounds, Massachusetts Agricultural College

LAWN-MOWING cost is influenced by many factors, some of which are easily overlooked. For example, hardly anyone would think that a difference in the kind of trees in the lawn would affect the pay-roll, yet even this small item may make a substantial increase or decrease in final cost.

It is obvious that trees are a hindrance to lawn mowing. Time is required to turn out for them and to hand-trim about them. It is also obvious, when considered, that the species of those trees makes a considerable difference in the cost of trimming the grass beneath them, and in making comparisons of lawn-mowing costs it is a factor to be considered.

Maples and elms are the cheapest to trim under. The large machines can get very close to the trunks, leaving only a small triangular area on two sides of the tree to trim by hand machine. Few branches and twigs are found beneath these trees, and in the fall they are denuded of their leaves rather late, and generally within one week, all of which makes the trimming easier and less expensive.

Evergreens are probably the most expensive to trim about, especially if their branches are resting upon or near the ground, and the larger the diameter of their spread, the greater the cost. If the branches are one foot from the ground, the amount of hand trimming is not as great as if on the ground. The large machines can, if care is used, work under these branches and reduce the hand trimming to the minimum. In either case, however, the evergreen presents a serious obstacle to the large machine. Much time and duplication of cutting is necessary before the machine can straighten out on a clear course again.

Lindens, if their branches hang low enough to the ground, present the same problem as the evergreen, with perhaps some hand trimming inside the leaf-spread. If their branches are trimmed high enough to permit free passage beneath, it will be necessary to spend time picking up twigs. There is hardly a time of the year when they are tidy, and they are especially annoying when fruiting.

Oaks, while not as bothersome as lindens, present a serious annoyance after the acorns begin to fall. The machine must either be set to cut higher than usual or the acorns must be raked before each mowing.

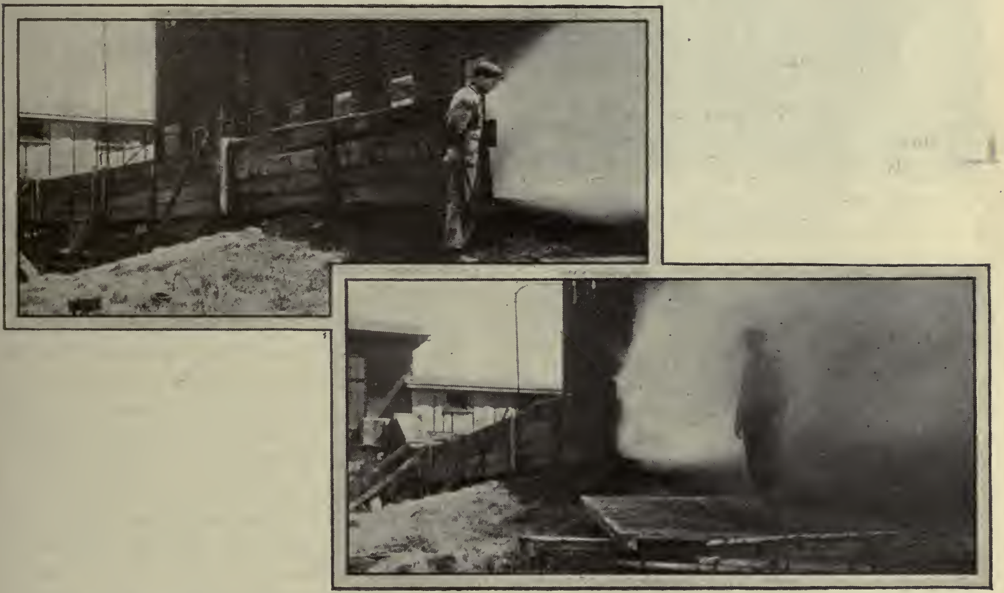
Horse-chestnuts present first the blossom stems, tough and very numerous, then the green burs, followed by the nut with the shucks, and——but no more need be said to demonstrate our proposition, that the kind of tree vitally affects the cost of mowing. Just keep a few records yourself and note the results.

Combating Odor Nuisance at Garbage Disposal Plants

Objectionable Odors Made Innocuous with Minute Quantities of Chlorine Gas

By W. J. Springborn
Consulting Sanitarian, New York City

THE average American city, as compared to Oriental cities, is quite free from obnoxious odors. Those odors which do exist present a difficult problem to the city official, because usually the source of objectionable odors is a necessary function in a community, the cessation of which would actually prove far more harmful than the odors themselves.



THE EFFECT OF THE APPLICATION OF CHLORINE TO GARBAGE DRIER ODORS
Above—Odor unbearable before introduction of chlorine. Below—Odor entirely eliminated by chlorine

Certain methods for the disposal of municipal waste, such as garbage and sewage, are nearly always accompanied by odors which annoy many people living near the plant. Occasionally plants of this kind have been abandoned with large monetary loss and not infrequently with a relapse to makeshift disposal methods. Rendering plants are the cause of considerable odor nuisance in the districts adjacent to them and also cause considerable reduction in real estate values. The courts have generally held that such plants are necessary and that the smell they produce is not a sufficient reason for closing them down.

Through the work of Professor Yandell Henderson, of Yale University, and his associate, Dr. H. W. Haggard, as consultants for the Bureau of Mines, the value of chlorine gas as a deodorizing agent has come to be more clearly appreciated. The sterilizing value of chlorine gas in municipal water-supplies is well known. In an investigation of the antiseptic value of small quantities of chlorine gas in air, it was discovered that the gas displayed a strong antipathy to any odor in the air, destroying it quickly. Probably a chemical reaction takes place which unites the odor

THE CHLORINE CONTROL UNIT AT NEW BEDFORD

and the chlorine to form an odorless compound. It is possible for either the odor or the chlorine to predominate and finally persist to the elimination of the other, but both can not be maintained in the same atmosphere for more than six or seven seconds, and when the two are exactly balanced both disappear so completely that they can not be detected.

A Practical Test at New Bedford

Opportunity to test the value of this discovery came when the municipal garbage disposal plant at New Bedford, Mass., for which the writer was acting in a consulting capacity, began burning garbage tankage under its boilers as a means of reducing expense. This produced a disagreeable odor, which was complained of by people in the neighborhood. When preliminary tests in other places indicated the value of Professor Henderson's discovery, a direct-heat dryer was installed for the purpose of extracting most of the moisture from the garbage before placing it in the Cobwell digesters. This direct-fire garbage dryer, which handles an average of 40 tons per day, measures 40 feet long by 5 feet 6 inches diameter. The dryer has been in continuous daily operation since last November. The material entering the dryer contains approximately 70 per cent moisture and is discharged with a moisture content of between 15 and 20 per cent. The odor-bearing vapors are drawn from this dryer by means of an exhauster or fan (which creates a forced draft for the fire) through a water spray or curtain and are discharged into a wooden duct 3 feet square and 70 feet long, placed horizontally on ground level, as shown in the accompanying illustrations.

Chlorine is fed into this duct at the point of discharge of the vapors from the exhauster in proportion to the amount of vapors being produced. The chemical control apparatus, known as the "Henderson-Haggard Deodorizing Equipment," regulates the flow of chlorine per hour. This apparatus, after being set at the desired rate of flow, requires practically no attention except to open and close the valves on the chlorine tanks when starting and stopping drying. This apparatus converts liquid chlorine into a gas which readily reacts on the vapors.

The amount of chlorine required to entirely eliminate the odors is very small. A total of 4,098 tons of material was handled between November and May, and the chlorine used on this tonnage amounted to 900 pounds, costing 7 cents per pound. In May 842 tons of garbage was handled and 299 pounds of chlorine was consumed, the chlorine now costing 5½ cents a pound. After the chlorine treatment, the vapors discharged from the duct are allowed to escape into the atmosphere, and at no time have objectionable odors been detected from the dryer, neither have any complaints been made since the installation of the equipment.

After leaving the dryer, the garbage is degreased by the Cobwell process and finished off for fertilizer purposes. The grease and tankage recoveries since the installation of the dryer are equal in every respect to the former products. The free fatty acid content of the grease averages 15 per cent, and the unsaponifiable matter about 1.75 per cent. According to C. M. Schindler, Superintendent of Garbage Disposal, New Bedford, Mass., the deodorizing process has been so satisfactory in exceeding the guarantees originally made, that there is no question of its permanency in New Bedford.

Another advantage, based on the known fact that preliminary drying would reduce the time of cooking of garbage in the digester, is that the expense of all the digestive processes has been reduced. The period of digestion has been reduced from 12 hours to about 3 hours.

An interesting test of the deodorizing process under the most severe conditions at New Bedford has been made by placing a quantity of putrid material, hair, feathers, leather scraps, and rags in the dryer, thus producing an odor so powerful as to be unbearable. The odor has invariably been promptly and effectively eliminated by the simple turn of the chlorine cylinder valve cocks.

Other similar installations have demonstrated the value of the system to packers, fertilizer and tankerage manufacturers, soap makers, and manufacturers engaged in similar enterprises. The method of installation is quite as simple as the process itself; it is only necessary to collect all of the odors in one duct or mixing chamber and then apply chlorine at a point where it will mix readily. Water vapor seems to be a necessary constituent of the air to be treated, and if this is not present it must be supplied. All dust must be removed. The water spray which supplies vapor to the gases also takes out all dust, the removal of which is essential to the success of the deodorization process. The size and nature of the chlorine control apparatus must be gaged so that the flow of chlorine will exactly balance the odors to be treated. All these factors must be carefully determined in advance by trained technicians, but once the installation is complete, it operates almost automatically with little further attention or labor. A special type of chlorine control valve, which keeps the flow constant regardless of temperature conditions or tank pressure, makes this possible.

Two Kinds of Firemen

THE medals awarded annually to members of the Fire Department of New York City mean little, as compared with the work of the department as a whole. Eleven awards for rescue or "heroic work at extreme personal risk" recompense but nine rescues out of uncounted lives saved. Other medals for company discipline and efficiency represent but a fraction of the smoothly running service that keeps down disaster by fire in all parts of the city.

The eye singles out these twenty-seven medal men and sees in them the sum total of service, superhuman bravery and devotion. But in the department itself these qualities are all in the day's work. And the day's work does not always mean making spectacular rescues.

It is unfortunate that some public-spirited citizen cannot donate a medal to be awarded annually to those firemen who prevent fires, who have organized and kept working a system that reduces fire hazard to a minimum. Though this aspect of the job is not spectacular, it is a source of fully as much pride as the other. Let us not forget it in acknowledging our appreciation of the fireman. —*New York Sun.*

The Attention Given to the Health of School Children

TWENTY, ten and even five years ago, the children in the elementary schools were given only casual attention from the health standpoint. There was little medical inspection and there were no gymnastics. Children took occasional breathing exercises, standing up in the aisles of the rooms. Children were supposed to be healthy.

This complaisant attitude existed until the war. The revelations of the examining boards in respect to the great number of physically unfit opened the eyes of the layman to a serious situation. If this was a serious situation in war time, it is equally serious in peace. Sickness means loss of time, and loss of time means loss of money. Wages stop and doctors' charges must be met. A number of people statistically inclined reckoned this loss of time in terms of money, and the amounts were so great that the imagination was staggered.

School authorities should seriously consider the question of health examination in schools and proper physical exercise to help the young mind to develop properly.

—*The Detroit Educational Bulletin.*

Summary of Street Lighting Statistics of Pennsylvania Cities of the Third Class--1921

Material Gathered by Pennsylvania Department of Internal Affairs, State Bureau of Municipalities

City	Population	Owned		No.	Kinds of Lighting	Cost Per Year	Lighting Appropriation	Per Capita Cost
Reading..........	108,955	Privately	Electricity Gas	915	Arc	$65.00	$88,000	.88
				716	Tungsten Incandescent	18.12		
				582	Welsbach Gas Lamps	23.00		
Erie..............	102,000	Privately	Electricity	1350	Magnetite Arc	52.93	85,964	.84
				87	100 Watt Incandescent	25.55		
				37	Ornamental Magnetite Arc	65.70		
				76	Ornamental Magnetite Arc	62.05		
				15	250 Watt	40.15		
				40	60 Watt	14.60		
Allentown.........	79,678	Privately	Electricity	352	Arcs	64.00	50,465	.63
				639	100 C. P.	19.25		
				12	Spotlight	64.00		
				146	250 C. P...	40.00		
				172	600 C. P. Boulevard Lights 86 lighted half night $40 for half night	64.00		
Harrisburg.........	77,876	Privately	Electricity	726	Arc	58.95	66,349	.85
				96	100 C. P. Incandescent	24.00		
				26	32 C. P. Incandescent	20.00		
				85	5 Lt. Clusters	85.00		
				52	Standards	98.60		
				78	100 C. P. Incandescent Series	22.00		
				30	100 C. P. Incandescent Series	20.00		
				209	Standards in Parks	24.00		
				15	600 Watt	58.95		
				30	100 Watt	24.00		
				4	3-Lt. Clusters	54.00		
				2	200 Watt Subway	39.00		
				11	100 Watt	20.00		
Wilkes-Barre.......	74,576	Privately	Electricity Gas Naptha	685	Novalux Arc	50.00	54,147	.73
				327	Gas	28.00		
				150	Naptha	29.00		
				30	1-Lt. Standards	33.00		
				105	5-Lt. Standards	50.00		
Johnstown.........	68,000	Privately	Electricity	594	Arcs	50.00	41,000	.60
				111	250 C. P.	39.00		
				12	100 C. P.	26.00		
				157	Incandescent	25.00		
				5	Special	39.00		
Altoona...........	62,134	Privately	Electricity	336	Metallic Flame Arcs	64.50	38,500	.62
				9	100 C. P. Series—Incandescent	21.00		
				81	400 C. P. Boulevard Standards	36.50		
				209	400 C. P. Novalux Fixture	30.50		
				16	Bridge Lights on meter			
Chester...........	58,610	Privately	Electricity	444	Arc	65.00	35,000	.60
				514	40 C. P. Incandescents	14.25		
				96	100 C. P. Incandescents	24.00		
Bethlehem.........	54,689	Privately	Electricity	238	300 Watt Mag.	66.00	47,000	.86
				431	40 Watt Incandescent	16.00		
				193	400 C. P. Incandescent	46.00		
				166	400 C. P. Incandescent (Midnight)	31.00		
				30	40 Watt Incandescent Ornamental	16.00		
Lancaster..........	53,681	Privately	Electricity Gas	670	Arc	66.00	62,000	1.15
				414	Welsbach type 50 C. P.	34.00		
				15	Naptha	48.00		
York..............	47,788	Privately	Electricity	497	Arc	55.00	37,505	.78
				92	Arc (Half Night)	45.00		
				141	Tungsten Lamps	30.00		
				12	5-Lt. Clusters	70.00		
				77	Fire Alarm Box Lights	7.00		
McKeesport........	47,249	Privately	Electricity	157	400 C. P. Incandescent	55.00	39,000	.82
				688	250 Watt Lamps	40.00		
New Castle........	45,387	Privately	Electricity	400	Arc	48.00	25,000	.55
				147	Incandescent	23.00		
Williamsport.......	36,560	Privately	Electricity Gas		Arc Lights	42.00	23,000	.63
					Gas Lights	25.00		
					Incandescents	18.00 24.00		

City	Population	Owned	No.	Kinds of Lighting	Cost Per Year	Lighting Appropriation	Per Capita Cost
Easton	34,151	City owns plant, poles, wire, etc. Buys current on meter. Electricity	222	Bracket Luxolite (60-80-100 C.P.)			
			342	400 C. P.	.03	34,650	1.01
			117	Post 600 C. P.	kilowatt		
				Park lights not in			
Hazleton	32,595	Privately Electricity	240	Arc	60.00	20,000	.61
			28	80 C. P. Mazdas	25.00		
			14	400 C. P. Mazdas	40.00		
			14	400 C. P. Mazdas	60.00		
			19	600 C. P.	45.00		
			19	600 C. P.	65.00		
			20	250 Watt	42.00		
			8	250 Watt	42.00		
			29	100 C. P.	17.00		
Lebanon	24,889	Privately Electricity	189	Arc	$66.00	$20,000	$ .80
		Gas	235	Incandescent	15.00		
			1	Signal Light	12.00		
Butler	24,016	Privately Electricity	60	5-Lt. Standards (1 250 C. P.—4 80 C. P.)	28,552.35	29,500	1.22
			126	3-Lt. Standards (1 200 C. P.—2 80 C. P.)			
			391	80 C. P. Incandescent			
			291	250 C. P. Incandescent			
				ADDITIONAL LIGHTING			
				5-Lt. Clusters	50.00		
				3-Lt. Clusters	45.00		
				250 C. P. Incandescent	34.00		
				80 C. P. Incandescent	21.25		
Sharon	21,964	Privately Electricity	150	Arc	48.00	14,312	.65
			350	Incandescent—100 W.	15.55		
Pottsville	21,940	Privately Electricity	245	Arcs	55.00	22,800	1.04
			94	Incandescent	23.00		
			54	Lum. Arcs	92.50		
			1	Arc & 3 Incandescent part time	13.02		
				Extra lights not listed	32.92		
Oil City	21,487	Privately Electricity	178	400 Arc	56.00		
			220	100 C. P. Incandescent	21.00	10,000	.54
Duquesne	19,200	Privately Electricity	219	250 C. P. Tungsten	40.00		
			10	100 C. P. Tungsten	25.00		
			6	Poles	60.00		
Carbondale	18,826	Privately Electricity	11	100 Watt Lamps	26.00	8,900	.47
			234	60 C. P. Incandescent	18.00		
			57	600 Watt Lamps	55.00		
Pittston	18,682	Privately Electricity	156	Arc	50.00		
			174	Incandescent	15.00	10,000	.54
Uniontown	15,765	Privately Electricity	14	600 C. P. Lamps	65.00	16,000	1.01
			141	400 C. P. Lamps	55.00		
			84	250 C. P. Lamps	40.00		
			180	100 C. P. Lamps	30.00		
Bradford	15,680	Privately Electricity	187	6-Ampere Arcs	55.00	16,690	1.06
			38	Ornamental	50.00		
			38	Half night	25.00		
			4	100 C. P. Incandescent (alley light)	24.00		
			6	400 C. P. Incandescent (park light)	25.00		
Meadville	14,714	City Electricity	200	4-Ampere Luminous Arc		11,520	.78
			35	60 Watt Incandescent			
Coatesville	14,660	Privately Electricity	134	Arc		12.000	.82
				1st-100	62.50		
				Next 25	60.00		
				Next 25	57.50		
			123	Incandescent	18.00		
Connellsville	13,900	Privately Electricity	2	400 C. P. Incandescent	55.00	12,000	.86
			82	250 C. P. Incandescent	40.00		
			264	80 C. P. Tungsten Nitro.	25.00		
			21	600 C. P. Tungsten Nitro.	70.00		
DuBois	13,818	Privately Electricity	156	Arc	55.00	9,500	.69
			3	Boulevard Lamps	90.80		
Franklin	10,070	Privately Electricity	143	Arc	60.00	10,500	1.04
			51	600 C. P. Incandescent	21.00		
			10	5-Lt. Post Cluster	42.00		
			10	1-Lt. Post Cluster	21.00		
			2	1-Lt. Post Cluster	42.00		
Monongahela	8,775	Privately Electricity	8	400 C. P. Incandescent	55.00	6,800	.78
			38	250 C. P. Incandescent	40.00		
			186	80 C. P. Incandescent	25.00		
Lock Haven	8,643	Privately Electricity	111	600 Watt	60.00		
			61	7½ Ampere	15.00		
			79	60 Watt	25.00		
Titusville	8,516	City Electricity	13	600 C. P. Series Lamps		6,000	.70
			160	400 C. P. Series Lamps			
			37	250 C. P. Series Lamps			
Corry	7,300	Privately Electricity	25	Arcs	52.50	5,600	.77
			26	100 C. P. Incandescent	17.00		
			268	60 C. P. Incandescent	15.00		

Binghamton's Budget Study Wins Public Interest

By W. Earl Weller
City Engineer, Binghamton, N. Y.

MAYOR THOMAS A. WILSON has recently completed a comprehensive and rather unique investigation of the expenditures of the various municipal departments in Binghamton, N. Y. Under the Mayor's direction, the annual budgets of the city for the past fifteen years were analyzed, on the general assumption that the municipality is a large public service corporation furnishing certain services to the people at cost. In making the analysis, the taxpayers' question, "What do we get for our money?" was borne constantly in mind. The various municipal services were arranged under four general headings: Governmental, Public Works, Public Safety, and Public Instruction. These four main headings were subdivided into separate services, as shown in the table opposite. Expenditures for such purposes as the assessing and the collecting of taxes, auditing and paying city bills, and conducting the affairs of the municipal civil service, were classified as general overhead items and prorated to the various services shown in the table. These expenditures might have been separately classified under the general heading of Governmental Services, but it was deemed better to restrict that classification to the true governmental functions.

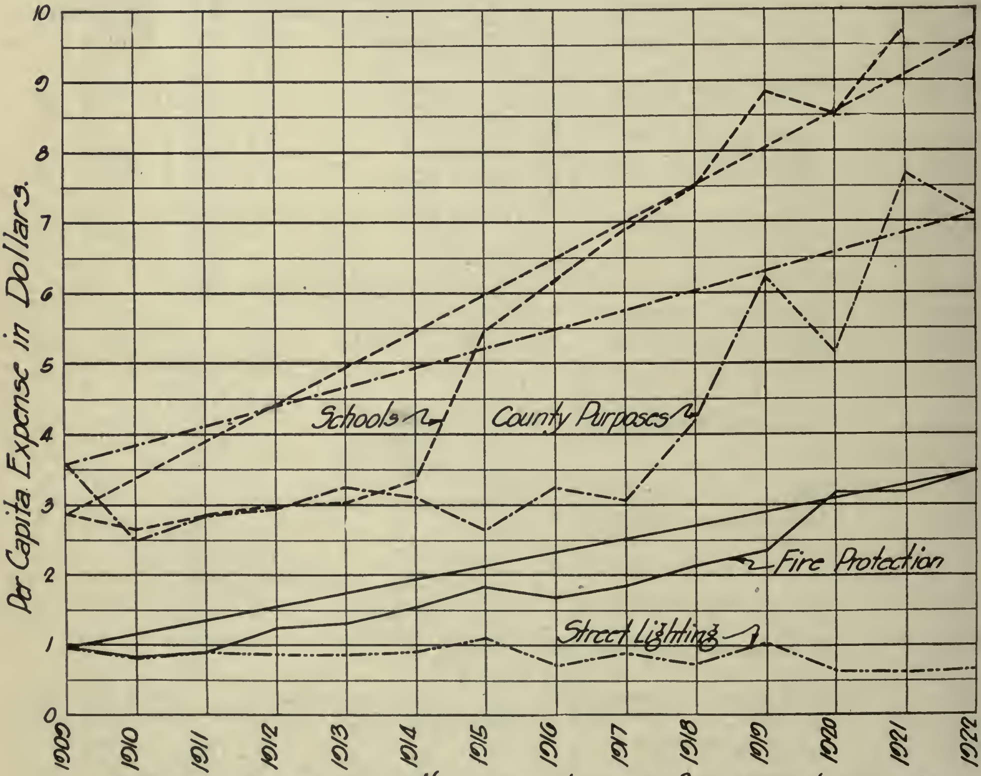


Diagram I.-Showing per capita expense by years, from 1909 to 1922 for Schools, Fire Protection, County Purposes, & Street Lighting in Binghamton, N.Y.

CLASSIFICATION ADOPTED FOR BUDGET ANALYSIS

- Governmental Services
  - Executive
  - Common Council
  - City Clerk
  - Elections
  - Judicial
  - State and County Tax
- Public Works Services
  - Water-Supply
  - Sewers
  - Streets
    - Pavements
    - Roads
    - Bridges
    - Walk and Curb
    - Miscellaneous
  - Rivers and Creeks
  - Garbage Collection
  - Street Lighting
  - Public Baths
  - Parks
  - Comfort Stations
- Public Safety Services
  - Police Protection
  - Fire Protection
  - Health
    - Hospital
    - Miscellaneous
  - Miscellaneous Protection
  - Charity
- Public Instruction Services
  - Schools
  - Library

The amount chargeable to the various services was determined in each case by adding to the budget appropriations for the operation and maintenance of that service all items of bond redemption and bond interest chargeable to the service under consideration. This was called the actual expense. To this figure was added the prorated share of the general overhead expense, and the result was called the gross expense. Any revenue received from the service and the prorated share of the general revenue of the city were then deducted, the remainder, called the net expense of the service, being taken as the charge against the taxpayers for whatever benefits they might derive from that service. In order to allow for the growth of the city and to reduce the figures to a comparable basis, all net expense figures were divided by a figure representing the population of the city for the year. The result was, in each case, the amount spent per person during the year for the individual service or, in other words, the per capita cost. These per capita costs were plotted in diagrammatic form for study. Any diagram showing a tendency toward increasing per capita cost was taken to indicate the need for a detailed study of the municipal service represented by that diagram.

Recognizing that an increasing per capita cost curve might indicate that needed extensions of that service had been made during the period investigated and might, therefore, be entirely justified, Mayor Wilson caused the 1921 budgets of the cities of Albany, Schenectady, Syracuse, Troy, Utica and Yonkers—the other second-class cities in New York State—to be analyzed along similar lines. Whenever the per capita cost of a service in Binghamton was shown to be far from the average per capita cost of the same service in the other cities, that service in Binghamton was carefully investigated. The results were of considerable practical value, and some specific examples are especially interesting.

The figures for street cleaning show that in 1921 Binghamton spent $0.455 per person, while the other cities spent amounts ranging from $1.183 to $1.438. Dividing the gross expense for street cleaning by the mileage of paved streets showed that Binghamton was spending $1081.50 per mile against a minimum of 1069.60 and a maximum of $1872.20 in the other cities. This difference was not so startling, and since the streets in Binghamton were being maintained in a satisfactory condition on the score of cleanliness, it was clearly not necessary to carry the investigation any further.

The figures for street lighting did not lead to so satisfactory a conclusion. These figures showed Binghamton to be spending $0.678 per person for street lighting, while the other cities were spending from $0.863 to $1.745 for the same service. Supplemental figures showed Binghamton to be proportionately as far behind the other cities on the point of candle-power furnished per mile of street as it was on the amount expended per person for the service. This indicated that Binghamton was not in step with the other cities in the matter of street lighting and, as a consequence, 1922 will see the inauguration of an extensive series of improvements to the street lighting system.

These examples indicate the practical use that was made of the charts and tables. Members of the city administration are satisfied that, as a method of self-examination or as an indication of departments in the municipal government needing especial attention, the method has great possibilities. At the time the investigation was started it was expected that the result would show rather serious extravagances in some of the departments. In this respect the investigation has been a gratifying failure. It has, however, indicated the need for the abandonment or the change of certain procedure, especially in connection with the construction of street improvements, if the city hopes to keep pace with the other cities of its class. It has also indicated that the increase in the gross budget of the city during the period in question is not the inexplicable mystery it was credited with being.

The figures are serving yet another purpose in allaying a well-defined and very prevalent opinion on the part of the general public that more money was being spent for municipal purposes than the needs justified. Incidentally, the consideration of the figures brings to the public mind the realization that municipal services are very similar to other public services and that increased demands bring very naturally in their wake increased charges. If the charts and tables had no other value than this last educational one, they would be well worth the time and effort spent upon them.

Compare Civil Service with the Spoils System, Not with Ideal Private Employment

To the Editor of the American City:

I have been interested in the discussion you are carrying in your columns as to whether civil service rules tend to promote efficiency, and note that you invite expression of opinion on the subject. Our experience and study of the question indicate that although civil service has many defects when analyzed in comparison with ideal civic employment conditions, it has operated with great success in improving the efficiency of the public service, especially when it is compared with operation under the "spoils system" which it replaced.

To my mind, the contrast should be between civil service as it operates and public service under the spoils system, rather than that the contrast should be with ideal conditions in private employment; for the reason that if we scrap civil service, we shall not advance to the ideal conditions obtaining in private employment, but shall step backward to the inefficient and political conditions which grow out of a spoils system.

The principal criticism of civil service as it commonly operates is that, designed originally to prevent the wholesale political turnover in public empoyment, it has swung too far toward guaranteeing life employment in the city service regardless of merit. The discipline that is effective in the average municipal employment is not so much the result of civil service rules as it is the result of the political system which still permeates municipal service to a varying degree throughout our various cities.

While I have observed comments of certain city managers to the effect that civil service has hampered them, it has been my opinion in analyzing their comments that what they desire is an improvement of civil service procedure and not its abolishment. Were civil service to be abolished in a city governed by a manager, and all appointments made subject to his sole control, he would find that the strong and continuous pressure relative to individuals in the service, or desiring to get into the service, would grow to a point where he would probably have little time for the transaction of the more important details of city business for which the municipality engages him.

Civil service commissions can help city administrators by pointing out wherein civil service powers are defective, and seeking to improve the laws so that the municipal service can be modeled more along the lines of personnel service in the larger corporations. To my mind, civil service must evolve in the future along the lines already established by large private corporations, wherein it will function as an expert, scientific, employment-classifying, salary-finding agency, with power reserved to the various executives to dismiss for cause, subject to review (but not control) by the civil service agency.

W. H. NANRY,
Director, San Francisco Bureau of Governmental Research.

May 25, 1922.

Forward Steps in Municipal Affairs

Police Departments

A Model Record Department

St. Louis, Mo.—The Police Department of St. Louis is accredited with having one of the most efficient record departments of any police organization in America. The system appeals to the busy police officer, who best can appreciate expediency in the matter of record and identification, and its card index system is second to none.

The inception of the record department probably was coincident with the establishment of the Police Department. Early attempts at such a system, utilizing large filing cases, although valuable, proved highly unsatisfactory, because of the constant enlargement of the force and the increasing prevalence of crime. In 1906, when the record department had become recognized as a positive factor in the organization, loose-leaf indexes were installed. These, also, subsequently proved inadequate, because of the increased volume of the matter handled and the complexity of the system.

In 1912 the need of a comprehensive system was so pronounced as to cause a complete reorganization of this department and the installation of a card index system. This system, on account of its elasticity and ready adaptability to change, is in use to-day and is capable of instant response to

ST. LOUIS POLICE DEPARTMENT'S MODEL RECORD ROOM the demands of nearly two thousand police officers, detectives, and policewomen.

This department now contains well over 800,000 records, systematically filed by letter or pocket system, the key to which lies in the card index, which has more than 10,000 subdivisions. John Smith, bitten by a dog, can find a complete account of that incident years after it occurred; Bill Jones, arrested for robbery and either discharged or convicted, will find that history complete, as the disposition of every case is followed to a conclusion. Records of all accidents, suicides, murders, burglaries, robberies, fires; everything a patrolman or other officer notes on his tour of duty which indicates an infraction of the laws or ordinances, or which may later be of value in litigation; arrests for speeding, for all vehicular offenses, for disturbance of another's peace; liquor raids, automobile thefts, drownings, railroad accidents, gang killings, frauds, embezzlement, houses of prostitution—keepers, inmates and frequenters; gambling houses; correspondence from other departments; men wanted, women wanted; deserters from the U. S. Military Service; lost, strayed or stolen property; —a thousand varieties of daily happenings are to be found in this department. All may be traced instantly, if there is but one name to work by, or the date of happening.

All names mentioned in reports are indexed upon cards indicating their respective class by color, each variety having a separate color. All crimes which may be traced by reason of criminals following a given habit in the commission of crime, are grouped; hence it is easy to remove a pocket from the records and find fifty or a hundred records, all in numerical form according to date, so that the last report indicates the count.

Citizens of St. Louis, familiar with the Police Department, point with pride to the fact that police organizations elsewhere have sent special emissaries to pattern their own new departments after this one.

The department is located at Headquarters, and occupies over 700 square feet of floor space, largely occupied by tier after tier of file cases. Situated at the front and extending along the entire room, is a counter at which the applicants for information may jot down such data as required. Much information is issued by telephone. The office force consists of one chief record clerk, fourteen file assistants, and two file indexers. This department is never closed. Day and night, holidays, or Sundays, the operation proceeds in a regular, even manner in the issuance of information to the men in the field, and to this dependable source of information is traced, to a large extent, the success of the department in the apprehension of the criminal element.

MARTIN O'BRIEN,
Chief of Police.

City Managers

Bringing the Government Close to the People

Muskegon, Mich.—It has been the intention of the City Commission from its very inception to bring the government as close as possible to the people. In order to do this, it is necessary, first, to keep the City Commission informed on all details of city work so that in its dealings with the public it can speak with authority, give correct information, and avoid the humiliation which is so often due to being unfamiliar with actual conditions. To supply this information, all heads of departments report daily to the secretary of the City Manager at four o'clock in the afternoon. Their combined report is mimeographed and mailed to the City Commission. The entire report can be written and mailed in less than twenty minutes.

The heads of the departments constitute a bureau known as the Efficiency Bureau, the purpose being to accomplish, at the lowest possible cost, the program of the City Commission. The Bureau meets regularly each week and, from its minutes and all data available, submits a quarterly report to the Commission, which is put in such form as to be easily compared with the corresponding period of the year previous. It was found that a quarterly report was far more advantageous than a monthly report, as the comparisons and trend of conditions are more easily comprehended than is the case in the monthly reports or in the evening letters.

The Commission is divided into committees without power to act, but to meet with and advise the City Manager. As the members are continually in contact with the public, their opinions on public policies cannot be too highly estimated.

In order to bring the entire government a little closer to the public, we have substituted an extra hearing, not required by the charter, on all projects. The committee, with the City Manager and the head of the department under which the project may come, meet with the public interested, on the ground where the work is to be constructed. After the matter has been thoroughly discussed and an agreement reached, it is taken up with the Commission in an official manner. In each case a letter is mimeographed and mailed to each property owner interested. This letter sets up the exact conditions, gives the cost of the project, or the comparative cost of various proposed projects, and really constitutes a sales letter selling the idea to the property owner. This practically eliminates the objector on proposed construction work, at least to such an extent that his neighbors can reply to any argument that he may advance, and creates a good feeling on the part of the property owners.

As for publicity, everything is thrown wide open to the newspaper reporters, trusting to their judgment not to publish anything that will hamper the city in using good business methods.

At the end of the year the Efficiency Bureau drafts an annual report. This report is mimeographed on the back of blueprints, or graphs, presenting the accomplishments of the city for the year, both graphically and analytically. The report shows the trend of conditions over a period of ten years. We have plates made showing the graphs as found in the report, and practically every club and organization in the city is given an illustrated lecture based on the progress of the city. Lectures are also given in practically all the schools. These are followed up with a series of written questions on civics which the students are supposed to get during the series of lectures, and they are given credit for the work done.

The annual report covers the true conditions of the city, both good and bad, as it is intended to correct the attitude of the public, which will change the trend of conditions. By doing this, we have brought the government very close to the people.

I. R. ELLISON,
City Manager.

Water Departments

Yellow Fire Hydrants for Philadelphia

Philadelphia, Pa.—After much study, Philadelphia has adopted yellow as the paint for fire hydrants. The selection of a paint of an effective color was a problem that caused the officials of the Water Bureau considerable concern, inasmuch as the damage to fire hydrants during the year, especially by automobiles, runs into large figures.

Yellow paint was decided upon in preference to the dark green or dark brown which has heretofore been used. The new paint was first tried on several of the centrally located fire hydrants, and the innovation was noticed by water bureau officials from all over this country and Canada who happened to be in Philadelphia recently attending the Water Works Convention. They were very favorably impressed by the use of this color when the advantages were brought to their attention.

In making this study, officials of the Water Bureau consulted with firemen, teamsters, automobilists, and persons in charge of traffic. Officials of the Fire Bureau considered yellow the best color because it can be easily seen at night and in foggy or rainy weather. This is a factor on which they lay much stress, as getting started early at a fire depends upon ability to locate the hydrants quickly. Officials of the Police Bureau united on it because they felt it would obviate the excuse offered by automobilists that they did not notice the hydrants when parking. Making the fire hydrants conspicuous will also greatly reduce the damage to them, as they will be seen in time to avoid collision. This is no small item, as prior to adopting this paint a fire hydrant was broken every day by an automobile or other vehicle.

Aside from possessing these advantages, yellow is very restful to the eye, is very durable, and in the case of Philadelphia has the advantage of being one of the two city colors.

CARLETON E. DAVIS
Chief of Bureau of Water.

SOME OF THE AUTOMOBILES PARKED NEAR THE BAND-STAND, LAKE HARRIET, MINNEAPOLIS

Park Departments

Community Singing in Minneapolis

MINNEAPOLIS, MINN.—This city has a park system of 4,000 acres and a Board of Park Commissioners which believes in the full use of the parks for the enjoyment of its citizens. In connection with the band concerts by Barrett's Band, and a military band directed by Captain M. M. Jallma, which are given in fifteen neighborhood parks, the city is conducting, under the leadership of Professor Harry Anderson, community sings which are attracting attention all over the country.

The Minneapolis *Daily News* offered a prize banner for the park which had the best record attendance and zeal shown in the sings last year, and Riverside and Logan Parks were tied at the close of the schedule. The tie was sung off at two extra concerts, at which three leading musicians were appointed judges, and Riverside won by a small margin.

This year the contest is on again and creating a greater interest than heretofore. Another beautiful banner is offered by the *News*, and President Harding has written a letter which will be framed and presented to the winning park together with the banner. The photographs show a part of the audience in Logan Park on a recent evening.

Nothing that Minneapolis has ever done for the pleasure of its people has seemed to reach their hearts more than the concerts and sings. The community sing feature is something in which they can all have a part.

The sings are opened with "America" and closed with "The Star Spangled Banner," with a variety of familiar songs between. New songs are printed on the programs and all are asked to commit them to memory. The season is eight weeks, with a concert in some park each evening, held on a schedule prepared at the beginning of the season.

In these trying times of political and class strife this seems to be a pleasure in which all classes in a community can participate with enjoyment.

J. A. RIDGWAY,
Secretary, Board of Park Commissioners.

ENJOYING THE COMMUNITY SINGING, LAKE HARRIET, MINNEAPOLIS

MUNICIPAL MILK PLANT AND WAGONS, TARBORO, N. C.

City Clerks

Municipal Milk Pasteurization Plant Proves Profitable

TARBORO, N. C.—To those who have been accustomed to thinking of pasteurization plants as possible only in larger communities, the experience of Tarboro, N. C., may come as a surprise. For three and one-half years this small city has had a municipal plant which handles all the milk used in the town, about 1,000 quarts daily. No milk, cream or skimmed milk can be sold in town unless pasteurized. This seems like a temporary municipal monopoly, but the decrease in the death rate of babies and the increase in general health since the installation of the plant have justified it.

The plant itself was installed by Dr. K. E. Miller of the North Carolina State Board of Health and the U. S. Government Health Service. It handles about $30,000 worth of milk yearly, pays expenses, and furnishes the highest quality of milk, delivered at the homes of the people, for 18 cents per quart.

The daily report of the manager shows in detail all information that may be desired for the office of the City Clerk and Treasurer, including the figures of profit and loss each day. Milk tickets are sold to the public, for two reasons: first, milk has to be paid for in cash; and, second, the milk tickets are destroyed daily at the office of the City Clerk, so that no tickets can be used a second time, thereby eliminating the chance of transmitting germs.

In the pasteurization plant the recording thermometer gives an accurate record of the treatment of the milk and, exhibited at the office of the City Clerk each day, assures the public that the safeguard of pasteurization for which they are paying has actually been applied to the milk they drink.

The plant occupies a steel building costing $5,500, with concrete floors, and is painted on the inside with white enamel. It is fitted with electric fans and is completely fly-proof. The manager and his assistants are required to wear white suits. The milk after being bottled is placed in the pasteurizer, carried to 150 degrees Fahrenheit at the rate of 5 degrees per minute, until 150 degrees is reached. There it is held for 5 minutes and then brought down to 145 degrees and held for 30 minutes, and then cooled at the rate of 5 degrees per minute down to 60 degrees.

The delivered price of milk during the past year was brought down to 17 cents and has been still furthered lowered, now selling at 15 cents. The people believe that the pasteurization plant has been a success, and the mortality figures confirm this belief.

J. H. JACOCKS,
City Clerk and Treasurer.

Gainsville Establishes a Publicity Department

Gainesville, Fla.—The organization of the Publicity Department of Gainesville grew out of the fact that we have had considerable trouble in keeping the Chamber of Commerce functioning properly. After careful consideration and discussion with friends and members of the City Council, the following ordinance was introduced and passed, thus creating this department:

"*Section* 1.—The office of Commercial Secretary of the city of Gainesville is hereby created. The duties of this office shall be to advertise and furnish information as to the advantages of this city for the location of homes and establishment of commercial enterprises.

"*Section* 2.—Immediately after the passage and approval of this ordinance the City Council shall elect some suitable person to fill the office of Commercial Secretary, who shall hold office until the first Monday of April, 1922. And on the first Monday of April of each and every year the City Council shall elect some suitable person to fill said office, who shall hold office for a period of one year and until his successor shall be elected and qualified."

We have been operating only about three months and we find that this is a very effectual way to interest the citizens of our city in the progress, development and growth resulting from effectual publicity. It is our duty to handle only matters of publicity, but we have really been doing Chamber of Commerce work as well.

By the city's operating its own Publicity Department, every citizen feels that he has an interest in the work being done, inasmuch as every taxpayer is contributing to the maintenance of this Department.

JOSEPH E. WAUGH,
Secretary, Department of Publicity.

Fire Departments

Last Appearance of Detroit's Fire Horses

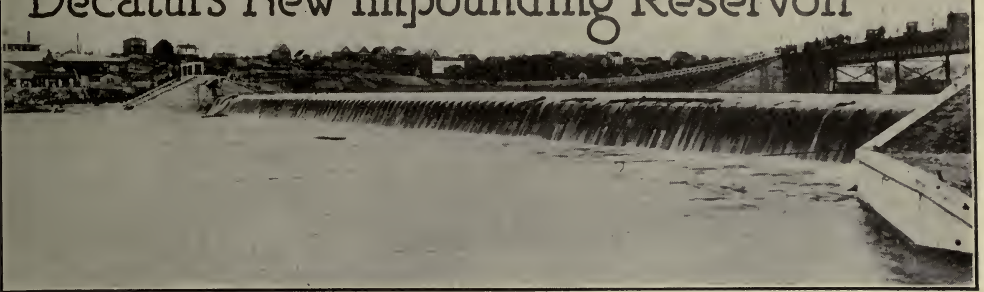
Detroit, Mich.—An actual fire-run in Woodward Avenue from the Grand Circus Park to the City Hall, by Engine Company 37, marked the passage of Detroit's last fire horses from active service, and the completion of the process of motorizing the Fire Department. All traffic was cleared from Woodward Avenue, and a reviewing stand was erected in front of the City Hall. There, the Mayor, the Common Council, the Fire Commissioner, and retired officers of the Department were on hand to celebrate the event. Both sides of the Avenue were lined with people and it was estimated that upwards of 50,000 spectators saw the last two teams of horses go down the Avenue while the bells in the City Hall tolled. Then the horses were trotted back up the Avenue at the head of a parade, which included representative types of modern motor apparatus, a motor pumping engine, a ladder truck, a rescue car, and a chief's car. The following day the horses were turned over to the Department of Parks and Boulevards for light work.

The whole ceremony was very impressive. Not the least of the features was the old fireman who received the horses at the City Hall, a man who had been in the service ever since the days of the old hand-drawn and hand-operated trucks.

HARRY BRABYN,
Secretary, Board of Fire Commissioners.

LEADING THE PARADE UP WOODWARD AVENUE, DETROIT, AFTER THEIR LAST RUN

Decatur's New Impounding Reservoir



Annual Water Famine Made a Thing of the Past by Construction of New Storage Reservoir

By E. E. Pierson

Bloomington, Ill.

FOR many years Decatur, Ill., has been threatened with a water famine during each summer. Only recently the Sangamon River, a small stream which flows slowly through central Illinois, has been dammed by the city to form a lake 13 miles long and averaging one-half mile in width, in which is impounded eight billion gallons of water. The dam itself is 30 feet high and 500 feet in length, with long concrete aprons at each end, bringing the total width of the impounding dam to 1,600 feet. Hardly had the dam been completed this spring when the spring rainfall filled the reservoir to capacity.

Two years ago the city was threatened with the loss of some of its leading industries because of the meagerness of the municipal water-supply. This brought concrete evidence of the great need of the undertaking which has just been completed. The financing of the new water-supply, which cost in the neighborhood of $2,000,000, came at a time when banks were declining to make loans, so that the committee in charge was forced to appeal directly to the people for the money. The city could not legally increase the bonded debt, so it became necessary to pay for the improvement through a private company. There were 981 stock subscribers, who invested the entire sum needed within four days after the books were opened, every cent of the stock being paid for. It bears 7 per cent interest. The water rates to consumers were increased to 25 cents per thousand, yielding $125,000 to $135,000 annual revenue. The major portion of this pays the interest and part of the principal each year, so that within twenty years the debt will be paid.

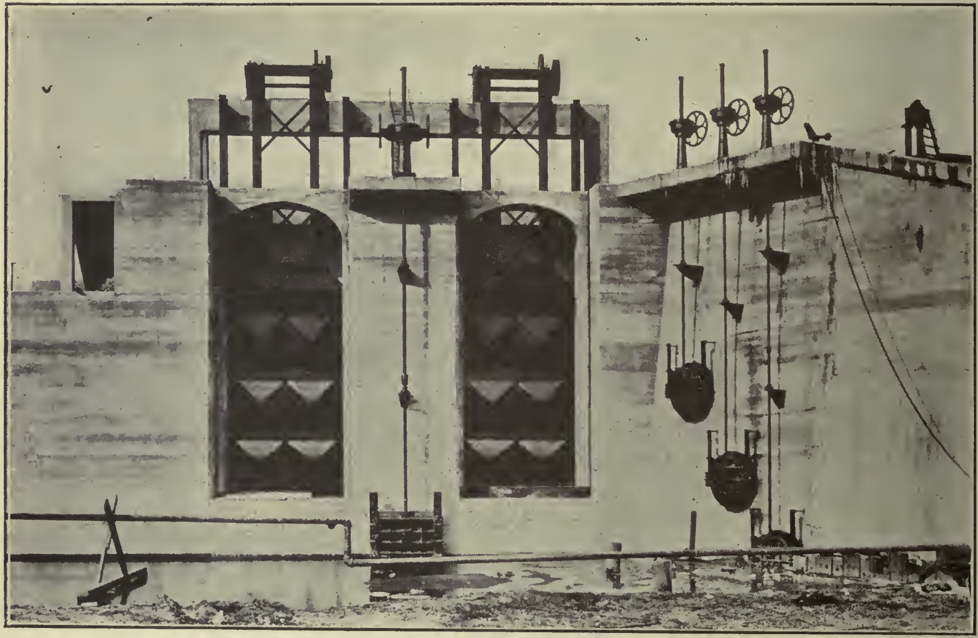
The actual construction of the dam was paid for by the city. The private water-supply company paid $612,000, or from $65 to $200 per acre, for the 4,200 acres of land which became flooded as soon as the lake was created. Where the owners would not sell for a reasonable figure, condemnation suits, 22 in all, were filed. It was necessary to clear the timbered sections within the area of the lake before the water was impounded. This process cost $100,000 more. The timber was felled and given away for firewood.

The cost of changing the highways and constructing bridges over the portions of the roads which were flooded, and elevating other bridges to 15 feet above the level of the lake, cost about $500,000. The original water-supply dam was constructed 595 feet above sea-level, and the new dam has raised this elevation 17 feet. The city was forced to acquire all the land within the new contour, so for safety's sake, and to provide for the future, the 615 feet contour was taken as the high-water mark. This included dozens of houses, portions of more than 60 productive farms, and many acres of timber-land. The city authorities, who in every dry summer had been forced to warn the public of the necessity for water conservation, because the only source of supply was a small river which became a mere trickle in August, are now able to permit water consumption freely, only watching for wasteful consumers.

The city park system will be extended to take in much of the land purchased for the lake. Not less than 2,600 acres will be added for this purpose. Beautiful wooded bluffs, fringing the waterway, have been made into attractive parks for all time.

Building the Dam

To insure the proper foundations for the dam, 26,000 lineal feet of bearing piles were driven under the main dam, and sheath piling was driven the entire 1,100 feet of the earth wings of the dam. In building the concrete spillway and earthen dam, a steel form was suspended within and braced from the timber traveler. This spillway is 22½ feet above the foundation and is 470 feet long. It was constructed in 18-foot sections, each requiring 250 cubic yards of concrete. The concrete construction of the spillway was divided into three stages. Alternate sections of the down-stream apron were placed first and then alternate sections of the 6-foot foundation course, the latter being 30 feet wide and extending 2 feet beyond the up-stream face of the dam. Two longitudinal ribs upon this base formed a key with the body of the dam, and a channel or recess formed a seat for the toe of the curved down-stream face. The third stage was the pouring of the 18-foot sections of the spillway. Vertical recesses 6 x 36 inches were provided to key these sections together. Two recesses in the top of the spillway will permit the hinged steel frames of the flash-board to be lowered during high water. The steel form, 20 feet long, was built up by plates and angles, each plate 1 by 5 feet, having a hole and cover piece so that any number of tie-rods can be placed in any position desired. A wooden bulkhead at one end was held in place by 1-inch tie-rods screwed into malleable iron sleeves attached to rods in the adjacent concreted section of the spillway. Similar sleeves were used also in the 1-inch transverse tie-rods between the front and back faces of the form. These sleeves were placed just inside the form so that the short rods could be unscrewed and the holes filled with concrete or mortar.


CONTROL GATES AT RESERVOIR BEING INSTALLED

To carry the Blaw-Knox steel forms, a traveler 30 feet high and 32 feet wide was built. Each side sill was carried by four

9-inch double-flanged wheels riding upon a rail, spiked to timber stringers laid upon the concrete base course. Suspension rods and brace rods with adjusting ratchets held the form in position, the concrete toe being secured also by a timber fitted to bolts, embedded in the concrete base. The concrete was transported upon a trestle erected across the river near the dam. The spillway was built by coffer-dam construction of sheet steel piling. All the piles were driven from a trestle built inside the coffer-dam.

Pearse, Greeley & Hansen, Chicago, Ill., were the consulting engineers for this work, J. Albert Holmes being the resident engineer in charge of construction. The work was let to C. M. Cope of Decatur, for whom J. J. McCabe was superintendent on the job.

Reducing Water Losses in Indiana Cities

A NUMBER of interesting examples of reduction of losses of water and how they have been checked up through the installation of water-meters were brought out at the March meeting of the Indiana Sanitary and Water Supply Association. E. J. Jenkins, Manager, East Chicago Water Company, reported that meters reduced the consumption in East Chicago from more than 200 gallons per capita daily, late in 1920, to 70 gallons per capita in 1921, when the amount of water unaccounted for amounted to only 12 per cent. The Vice-President of the Gary Heat, Light and Water Company, said that 83 per cent of the water pumped through that system, which is only 50 per cent metered, could not be accounted for. At North Manchester the loss is only 6.77 per cent. W. S. Cramer, Chief Engineer, Lexington, Ky., reported that that city, which was the first all-metered city in the United States, has 16½ per cent loss.

Whiting, Ind., has no meters. In 1920 the consumption was 4.2 million gallons daily, or 420 gallons per capita. A house-to-house survey disclosed 700 leaking toilet fixtures. The consumption was reduced by 1,000,000 gallons daily after repairs to the services were made and a few large leaks in mains were shut off. The use of meters might still further reduce the consumption.

Michigan Counties to Support Public Health Nurses

Supervisors Are Taking Over Public Health Work from the Red Cross

IN Michigan forty-six of the eighty-three counties have public health nursing agencies carrying on definite work, with from one to fifteen nurses. In twelve counties the Board of Supervisors have taken over the public health nursing programs, and four others are partially supported by taxation. Twelve counties have requested the State Department of Health to secure public health nurses to start their programs, and in twenty-six others supervisors will be asked by the Red Cross to take over their county nursing programs this year.

In inducing supervisors to support the work, public health authorities have been able to cite many instances where nurses have helped to prevent disease and save lives. John Smith, Jr., for instance, one month old, obviously not well, is being fed condensed milk, though the farm's Duroc-Jerseys were given 10 or 12 gallons of skim milk twice daily. The county health nurse called on the young mother to explain to her that the baby's diet was at fault, and saved the child's life. Another child, three years old and several pounds underweight, was put on a whole milk diet. To-day both children are well.

Mapleleaf School, in another county, was attended by twenty pupils from twelve different families. The morning the county nurse visited the school a new pupil whose parents had just moved into the community was being admitted. Throat swabs which the nurse took of all the children revealed that the new scholar was a "carrier of virulent diphtheria organisms." He was excluded from the school, and the possibility of diphtheria's developing among the children, with its attendant toll of lives, was thus narrowly averted and again the value of the nurse demonstrated.

Fire Regulations Undergoing Changes in Many Cities

Study of Causes Leading to Adoption of Fire-safe Roofs Throughout the Country

DURING the five years 1916 to 1920, Americans have been burning up property at the rate of $334,544,535 a year, according to the National Board of Fire Underwriters, which has been making a study of more than 3,000,000 fires occurring within that time. The total loss, for the period, of $1,672,722,677 would, according to engineering authorities, be sufficient to build 334,000 dwellings at $5,000 each—enough housing to care for 1,700,000 persons. This is equivalent to the combined population of Connecticut, Nevada and Wyoming.

The figures show that the value of property destroyed by fires communicated through the roof was $223,000,000. Study of these and similar figures are leading to drastic changes in fire regulations in many cities of the country. Roof fires are among those considered easily preventable, and steps are being taken with that end in view. Fire department records in many cities show that about 40 per cent of all conflagrations have resulted from sparks and flaming embers carried by high winds to the roofs of near-by buildings. It is declared that if proper care had been exercised and fire-resistant roofing materials had been used when these buildings were erected, most of the losses would have been averted.

In the early part of last year the citizens of Indianapolis, Ind., began a campaign of fire prevention. Before the campaign was launched, city officials joined with representatives of the Indianapolis Chamber of Commerce in gathering information. A fire prevention campaign had been conducted in Cincinnati, Ohio, where it was found there had been 1,872 fires during 1920. Indianapolis had suffered 3,465 conflagrations the same year, notwithstanding that the Hoosier capital was then only half as large as Cincinnati and had approximately only one-half its property valuation. Cincinnati had only 56 roof fires that year, while Indianapolis had 1,400. The net result of the Indianapolis campaign for fire-safe roofs was a reduction in 1921 of $550,000 in losses and 350 in the number of fires. Of 1,199 fires in Indianapolis reported by Fire Chief O'Brien of that city in 1922, 850 were still directly chargeable to inflammable roofing. New York City and Chicago were the only cities leading Indianapolis in the number of fires during the year.

"In the year 1911," says Fire Chief O'Brien, "Indianapolis had a fire loss of somewhat over $300,000 and a total of less than 1,700 fire alarms. This fire loss increased by leaps and bounds year after year, until we reached a loss of more than $1,800,000 in 1920, with a grand total of 3,465 fires." The increase in fires, he says, necessitated the constant enlargement of the Fire Department, until the cost of maintenance reached $1,000,000 a year. An ordinance has been introduced in the Indianapolis City Council providing for the elimination of all wooden shingle roofs within eight years.

Fire department records in Wabash, Ind., show that of 30 fires in that city from January 1 to March 1 this year, 25 were due to wooden shingle roofs. As in Indianapolis and Cincinnati, many old shingle roofs in Wabash are being covered or replaced with asphalt or other fire-retardant or non-combustible roofing.

The cities and towns in this country now requiring fire-resisting roofing within their fire limits represent practically all sections of the country. Among them are: Birmingham and Montgomery, Ala.; Wilmington, Del.; Jacksonville and Tampa, Fla.; Augusta, Columbus, and Savannah, Ga.; New Orleans, La.; Cambridge, Chelsea, Fall River, Lawrence, Lexington, Lynn, Newton, Salem, and Somerville, Mass.; Hoboken, Jersey City, Newark, Paterson, Perth Amboy, and Trenton, N. J.; Allentown, Easton, and Reading, Pa.; Charleston, S. C.; El Paso and Paris, Tex.; Norfolk and Portsmouth, Va.

What City Planning Means to Raleigh

By T. B. Eldridge

Mayor, Raleigh, N. C.

Editorial Note.—*The following statement by Mayor Eldridge was included in a pamphlet issued by the city of Raleigh early in 1922, which contained a copy of the act of the Legislature authorizing cities to appoint city planning commissions, a copy of the Raleigh ordinance authorizing the appointment of the Raleigh City Planning Commission, and then the Mayor's statement on the need for action. The pamphlet, which was compact and designed to fit an ordinary envelope, aroused so much interest, and the Mayor's statement is so constructive and with minor changes so applicable to many communities, that* The American City *has obtained his permission to reprint it in full. Since this was written, an appropriation of* $3,000 *has been made for the preliminary work of city planning and zoning, and Jefferson C. Grinnalds has been engaged as consultant to the Commission.*

CITY planning is a phase of municipal activity that has been neglected entirely too long in Raleigh. It should have been begun a hundred years ago. Had there been a municipal planning commission functioning when the town began to outgrow its original limits, certain conditions that exist to our regret to-day and which must be corrected to-morrow, could not have happened. Consider Halifax Street—an avenue of magnificent width for a few blocks from the Capitol, and then suddenly narrowed to the dimensions of little more than a lane. Look at Fayetteville Street—the southern counterpart of Halifax—a street to inspire us with pride, till it strikes an obstruction, shoots off at an angle, greatly contracted in width, and then by sundry crooks and turns finds its way to the open country.

Had a city planning board been operating in Raleigh a century ago, the railroads would not have been allowed to cut across street extensions without providing bridges or underpasses. Observe what happened to Edenton Street and Lane Street. Take a position on Blount Street near the Governor's Mansion and look northward. The County Home is in full view and Blount Street ought to lead right up to its doors; but walk or drive a little further, and two railroads are found to cut off progress in that direction as effectually as though the space were occupied by a river with neither bridge nor ferry. There is no way to get across without flying. A viaduct at this point is a positive necessity for the future. A city planning board, when the North Carolina Railroad was constructed, would have relieved the present generation of the problem of bridging the tracks at Ashe Avenue, and on the other hand never would have permitted the dangerous grade crossing at Park Avenue.

Take another instance of misdirected municipal development, namely, Hillsboro Street westward from the Oberlin Road. The greatly decreased width of the street at this point is an ugly disfigurement of the city's most important avenue, an obstacle to vehicle travel, and a handicap to the westward development of the city. Sooner or later this street will have to be widened; indeed, the full width of Hillsboro Street should be continued to Method. The question arises whether to attack the problem now or defer it until property values are enhanced and the cost of the improvement greatly increased. The City Planning Commission will have to tackle the question.

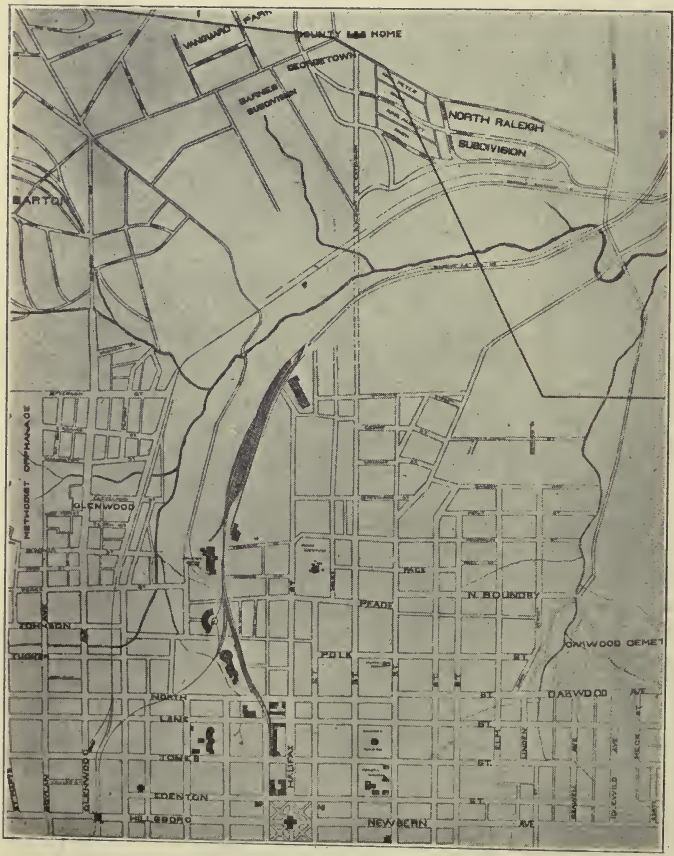
Consider what might have been the possibilities of westward expansion if the State Fair had been located somewhere other than on Hillsboro Street. The inevitable growth of the city in that direction should have been foreseen; but the men of a generation ago apparently had no vision of the big town Raleigh has now become, and the bigger town it soon will be. It may not be worth while to wish that the Fair had been moved a little off from the main road, but it is plain enough that its situation presents one of the most difficult problems that will claim the attention of the Planning Commission.

Take another phase of misdirected municipal expansion. Behold the crazy-quilt patches that have been stuck on the sides and hung on the corners of the original city plan, without thought of the effect on the future city. There is some argument in favor of streets following the contour of the land, and there is no denying that curves are more pleasing to the eye than straight lines; but contours and curves without regard to a harmonious whole make and multiply difficult situations that some day will prove costly to the city. By and by it will become a municipal necessity to disregard contours and run straight lines through curves; and great will be the cost thereof. Even to-day, within a bowshot of the heart of the city, streets are being laid out and graded very much as though the owners of the property regarded the making of streets nobody's business but their own. Such things ought not to be, and, with an efficient City Planning Commission functioning in Raleigh, such a situation cannot happen again.

Give the kaleidoscope another turn—and what do we see? Streets that start somewhere, traverse a few blocks, and get nowhere; streets that were laid off for no earthly purpose but to sell building lots; streets with more dead ends than anything else; streets that start and stop, that skip intervening space and begin again, go on farther, and then give up in despair of making a worth-while connection. Look around. They are almost everywhere in Raleigh.

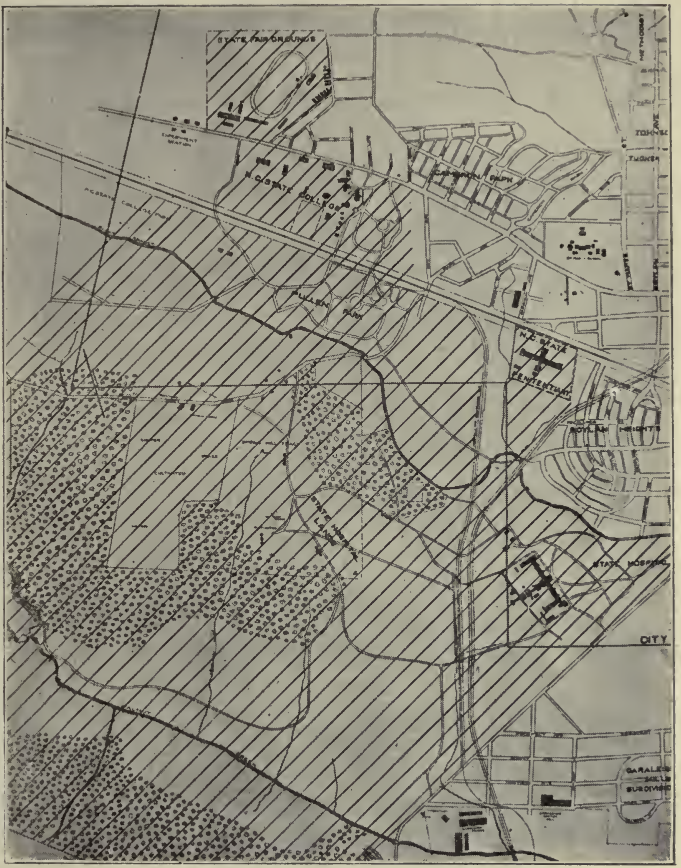
Once more. There are cities whose principal claim to consideration is the facilities they offer for getting in town and getting out again. Raleigh is not in that class, which may be a disadvantage or otherwise, according to the point of view. Think of Glenwood Avenue as the only outlet northward, or of Hillsboro Street, which serves the same purpose on the western side of the city. Fortunately, there are possibilities of northward communication through St. Mary's Street and Oberlin Road; but who except a city planning engineer can show us another way in or out to the west? It is said of a railroad that its roadway and equipment are valueless without terminal facilities. A city without sufficient gateways is a parallel case.

The wealth of Raleigh in parks and unimproved park spaces is little understood by the average citizen. Everybody knows about Pullen Park, Nash Square, and Moore



NORTHEAST CORNER OF RALEIGH, N. C.
Showing how the continuity of the streets is interrupted by railroads

Square. There are a number of others that have been dedicated to public use, but hardly recognized by the powers that be or that have been. and there are other spaces of no practical value to the owners that could be made beauty spots for the future big town that Raleigh is certain to become. Park improvement on a large scale may well be deferred until the city becomes more populous and wealthy, but it is the part of wisdom now to get a line on what we have and preserve it from abuse or encroachment. The acquisition of additional park areas will be a stroke of municipal statesmanship.



SOUTHWEST CORNER OF THE CITY

Showing how expansion is made impossible by publicly owned property. Note the street between the State College and th State Fair Grounds, the only outlet to the west on a boundary of two miles

But whatever park problems are left to the care of to-morrow, there should be no such policy toward the two squares in the heart of the city. Nash Square necessarily makes the first impression on visitors arriving by railroad. Imagine what kind of impression! Nash Square to-day is little more than an open space and an opportunity. Moore Square is a network of by-paths and a convenient place for the display of second-hand wearing apparel. A City Planning Commission would win its way to the hearts of the people by rescuing these squares from their state of neglect.

The City Planning Commission will take notice that there are no playgrounds in the city and no playground equipment except a few pieces in certain school yards.

Zoning—what does it mean? Well, it exists in Raleigh to-day to a limited extent in the restrictions applied to the construction of buildings in what is called the fire district. But zoning goes a long way beyond that. The zoning power may prohibit one from building a garage on the street line close to his neighbor's house. Exercise of the zoning power would have prevented the disfigurement of splendid residential districts in ways that have already happened by the encroachments of business and trade. Briefly, the zoning power gives authority to establish districts and place reasonable limitations on the use that may be made of property therein. It compels selfish interests to yield to the general welfare. It requires the few to respect the rights of the many. It is designed to conserve health, promote happiness, and serve the best interests of the community.

The foregoing is not an argument: it is an abbreviated statement of some of the reasons why Raleigh should get into a movement that hundreds of progressive cities have found essential to their systematic growth, harmonious development, and the welfare of their citizens. The necessity for this statement consists in the fact that it is an entirely new proposition so far as the citizens of Raleigh are concerned.

Reducing the Cost of Fire Protection

Report of Former Commissioner of Public Safety, St. Paul, Minn., Contains Pertinent Facts Worth Studying

THE Bureau of Fire of the Department of Public Safety, St. Paul, Minn., spends approximately 10 per cent of the city budget every year. It has been admitted in the past that the cost of fire protection was abnormally high in certain districts, but the exact cost was not available because expenditures were shown only in aggregate form. During the year 1921, the first attempt was made to show the cost of fire protection by the individual companies and to compare them with the work performed.

The Fire Department now consists of 37 companies. The cost of maintaining them during 1921 amounted to $856,640.92. They answered 2,192 calls during the year, the companies making 6,375 runs. In other words, three companies on the average responded to each alarm. The number of runs by individual companies varied from 716 to 42, the average being 172 runs. The cost per run during the year 1921 ranged from $32.14 to $531.16, averaging $134.37.

Bearing in mind that each fire was attended by not less than three companies, the cost of fire protection based upon the number of alarms turned in was about $391 for each alarm. Considering further, that out of a total of 2,192 alarms, there were only 1,254 building fires, the other alarms consisting of grass fires, false alarms, etc., the average cost of fighting building fires was nearly $700.

An interesting example of how the cost of fire protection can be reduced is shown in the case of Engine House No. 21, where the company consists of a force of 12 men, 5 horses, and one old-style steamer and hose cart. This company made 42 runs for the entire year, the cost being $531.16 per run. This condition has been remedied, reducing fire protection costs by about 35 per cent in this district. It was proved to the residents of the district that the horse-driven company was not giving them the fire protection they thought they were getting, because a motor apparatus located on the other side of the river would reach practically every fire in the district served by Engine House No. 21 quicker than the horse-drawn company. For this reason the horse-drawn steamer apparatus was replaced by a modern hose and chemical motor-driven apparatus which reaches the fire within a few minutes after the alarm is turned in and extinguishes the blaze before it has an opportunity to do much damage. From a financial standpoint the figures given below illustrate convincingly the saving which has been accomplished, in addition to better fire protection:

	Men Employed	Salaries Paid	Other Expenses	Total
Expenditures in 1921 of the No. 21 Engine Company	12	$20,022.52	$2,306.26	$22,308.78
Estimated expenditures for 1922 of the No. 21 Engine Company	8	13,860.00	750.00	14,610.00
Saving for 1922	4	$6,162.52	$1,556.26	$7,698.78

Analysis of Economy of Motorization

The benefits to be derived from complete motorization have been discussed by the Bureau of Fire upon various occasions. Last year when $100,000 was asked to accomplish this, the request was turned down even after figures had been submitted proving that the original outlay could be saved on the reduced maintenance cost inside of two or three years. The following analysis based on costs of maintaining fire companies in St. Paul shows forcefully the savings which could have been effected with complete motorization:

Average total of all costs of the 10 companies with the horse-driven equipment, per year	$24,021.49
Average total of all costs of the 8 companies with fully motorized apparatus, per year	21,888.91
Saving in operating costs of companies with motorized apparatus, per year	$ 2,132.58

While the motorized companies each cost $2,132.58 less for up-keep and answered 174 alarms, traveling 382 miles, the companies with the horse-drawn apparatus answered 105 alarms and traveled only 185 miles. The cost per alarm answered by the motorized company was $125.62, while each alarm answered by the horse-driven companies cost $227.91, or almost double. Bearing in mind the increased efficiency of motorized companies, the present ten companies in St. Paul with the horse-drawn apparatus could be replaced by nine companies with up-to-date fire-fighting equipment, saving $24,000, besides giving better fire protection. The effect of complete motorization as to savings on operating expenses results in the following summary:

Saving on operating costs of the proposed 9 motorized companies at $2,132.00....	$19,188.00
Saving effected by discontinuing one company	24,020.00
Total saving each year effected by motorization	$43,208.00

While there is a little saving made in the operating cost of the company with the tractorized steamer engines, it is negligible, because the largest item of expenditure, the salaries, remains the same whether the steamer is tractorized or not. The steamer engine company required 14 men for the double shift. This was reduced to 13 men on the horse-driven companies, which is one man below the National Board of Fire Underwriters requirements. The up-to-date motor pumper and hose cart required the attendance of only 12 men for the two shifts. The tractor-drawn steamer companies are located mostly in the high-value districts, where it is not advisable to cut the force down, and, therefore, the services of 10 men are needed that could be dispensed with if these companies were fully motorized. The present average cost of companies with tractorized steamers is $26,005.27, or $4,116.35 more than the cost of a modernly equipped company.

One redeeming quality of tractor-drawn steamers is that their work at fires is on a par with fully motorized apparatus, and the number of alarms answered is also practically the same.

The Fire Repair Shop

The fire repair shop is now operating under a rational cost accounting system, with C. L. Willis as Superintendent of Apparatus and L. Posch and William A. Milner in charge. One feature of the cost of repairing the fire apparatus is that unless the apparatus has an accident in going to the fire, the cost of regular repairs and maintenance is very low. This is in spite of the fact that it is essential to keep the fire equipment in the very best possible condition. Minor defects that could be overlooked on trucks or automobiles used for other purposes must be immediately taken care of on fire apparatus. Furthermore, the repair parts are specially made and are therefore quite expensive.

Cost of Operating Fire Apparatus

Basing the performance of the fire apparatus upon the length of time it works at fires, the cost per working hour is as follows:

Triple combination motor-driven pumpers—750 gallons per minute	$3.66
Double combination motor-driven pumpers—900 gallons per minute	5.49
Tractorized steamers—600-800 gallons per minute	7.57
Horse-drawn steamers—550-700 gallons per minute	2.26
Squad automobiles	6.18
Chemical trucks	5.96
Hook and ladder trucks	5.22
Motor-driven hose carts (accompanying tractorized steamers)	3.16

Although a detailed statement was prepared also showing the cost based upon the fire calls made, the above table showing the cost on the basis of hours worked is more equitable, because there is wear and tear not only on the apparatus while going to the fire, but also upon the pumping machinery when operating at the fire.

The statement of operating cost of horse-drawn steamers is somewhat incomplete inasmuch as although the motor-driven apparatus is also charged with the motive power, that is, the gasoline, it is not practicable to apply the cost of horse up-keep to the actual work the apparatus performs at fires. The same also applies to coal which is used for heating the engine heaters. It is this class of expenditure which costs the fire department approximately $1,000 more for the maintenance of each horse-drawn company, because these costs are incurred like any other fixed charges, even if the engine did not turn a wheel for the whole year.

The Value and Importance of Fire Alarm Boxes

During the last two years there have been 45 new boxes placed in different parts of the city. This represents a greater increase in this item of fire protection than has been made in the eight years previous. In the last report of the Investigating Committee of the National Board of Fire Underwriters, there is a recommendation made for the installation of at least one hundred new fire alarm boxes in St. Paul. It is only reasonable to base the need for improvement upon the value such improvements will be to the community, and therefore the service rendered by the fire alarm boxes now installed should indicate to some extent whether more fire alarm boxes should be placed in service.

The schedule below shows the various kinds of fire alarm calls turned in for the last three years:

	1921	1920	1919
Fire alarm box calls.....	147	130	97
Telephone calls	1,983	2,066	1,423
Other calls	62	63	48
Total	2,192	2,259	1,562
Percentage of box calls from the total amount of calls	6.7%	5.7%	6%

In 1920 a list was made showing the number of calls sent over the individual fire alarm boxes. This is tabulated above:

Number of boxes that sent in 7 fire calls........	1
Number of boxes that sent in 5 fire calls........	3
Number of boxes that sent in 4 fire calls........	2
Number of boxes that sent in 3 fire calls........	3
Number of boxes that sent in 2 fire calls........	20
Number of boxes that sent in 1 fire call	51
Number of boxes that sent in no fire calls.......	194

Six per cent of all alarms sent in over the fire alarm boxes does not speak very well for the use the public is getting out of them. This is due to the fact that every house has a telephone these days, and that in itself accounts for the 93 per cent of all alarms being sent over this much more accessible means of communication with the fire alarm office. However, this should not militate against the installation of boxes in every school, motion picture house, theater, public building and public hall, and a sufficient number throughout the city to make it possible to send in fire alarm calls expeditiously. Furthermore, the public should be educated to use the fire alarm boxes rather than the telephone, as the spoken word is so unreliable in times of excitement.

Repairing Asphalt Streets in Winter

Timely Suggestions That Preparation May Be Made Before Cold Weather Arrives

A METHOD of repairing asphalt pavements during the winter months, when municipal and county asphalt plants usually are closed down, has been evolved with success by Charles L. Harrison, engineer in charge of street repairs at Cincinnati.

The old asphalt pavement is removed from the streets and hauled to the yards during the regular working season, the pavement being broken down to approximately 2½ inches. The heating plant consists of four horizontal four-wheeled kettles, each of 100-gallon capacity. The old asphalt, broken to proper size, is placed in the kettles in the afternoon and the fire started at 5 o'clock the next morning. Four or five gallons of water are added and the covers are placed on the kettles. After being allowed to steam for half an hour, the mixture is turned over with heavy bars, is spaded at one end and then allowed to steam again. The operation is repeated until at the end of three hours the water has evaporated and the mixture is ready for use at a temperature of 325 to 375 degrees Fahrenheit. It is then transferred to another kettle, under which a hot fire has been built, and is hauled therein to the street, where it is laid in the same manner as "new stuff," except that it is tamped into place instead of being rolled. The four kettles are never allowed to be more than half full, as the mixing cannot be done in an economical manner if the kettles are full.

The force engaged in breaking, heating and laying the asphalt in Cincinnati consists of only the seven men who are kept during the winter as the nucleus for the spring force and a driver for a two-horse wagon. No additional bitumen or dust filler is added to the old asphalt, and the cost is slightly less than the average cost per square yard for repairs with new material.

Why Crime Decreased in Detroit

By Arch Mandel

Detroit Bureau of Government Research

MAJOR crimes in Detroit decreased 58 per cent in 1921 as compared with the 1920 record. The crimes referred to are robbery, breaking and entering, and larceny from the person. This is a good record in crime reduction, and "one that is not nearly equalled by any other large city in the United States." This statement is made by the Commissioner of Police in Detroit after a comparison of data received from the six principal cities of the country. Why this reduction in 1921 to a point not only below that of 1920, but also below the record of 1918, the war year, when crime in Detroit had reached its lowest level for many a year?

The reasons for increase or decrease of crime are many and varied, but the greatest factor responsible for its decrease in Detroit is probably the one mentioned by the Police Commissioner in his last annual report, which states that the good record in 1921 "is due to the harmony and cooperation which have existed during the past year between the Recorder's Court, the Prosecuting Attorney's office, and the Police Department." The relationship among these agencies is all that could be desired from a law-enforcement point of view. There is a determination on their part to cut down crime, and this determination manifests itself not only in intent, but in action. They are working together with a common purpose.

It is undoubtedly true that the sensitiveness of professional criminals and would-be criminals to aggressive law enforcement has kept them away from Detroit. The knowledge that the Police Department is persistent in its follow-up of crime and that a conviction in court means a long prison sentence, contributed largely to the 1921 record. Detroit used to be known among crooks as an "easy town," and now they write each other to stay away from Detroit because the authorities mean business.

Determined Citizenship, the Motive Force

Naturally, there is a force behind this determined activity on the part of the law-enforcing departments. This force is an articulate citizenship that has placed in power an aggressive, clean, and effective city government; an administration that is as non-political as it is practically possible to make it. The Mayor, with no political axe to grind, is interested solely in the efficient conduct of the city's affairs, and the only thing he demands of his department heads is a strict performance of the duties with which they are charged.

The Police Department is operated by the Police Commissioner, who is not obliged to cater to any particular group in the community. Politics are eliminated. This means that the men are selected and promoted to

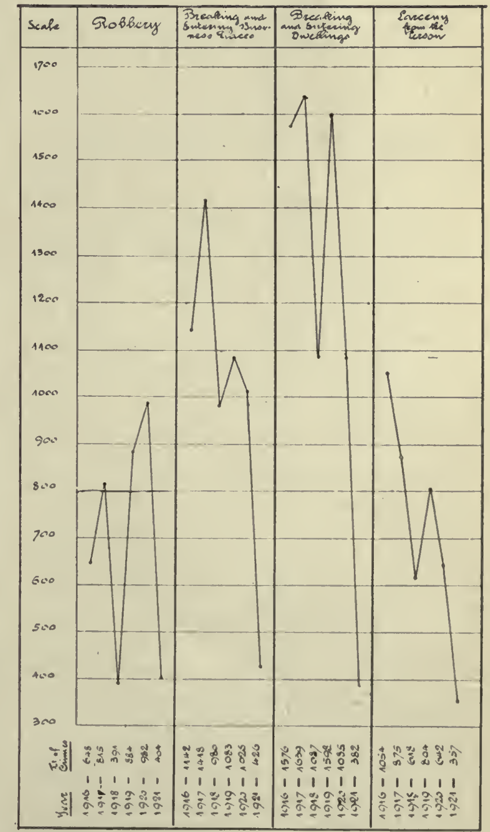


DIAGRAM SHOWING THE REMARKABLE DECREASE IN CRIME IN DETROIT their jobs because of their fitness. Pull is no substitute for merit. Policemen are not in fear of being reprimanded, transferred, demoted, or losing their jobs because of possible offense to influential interests or persons in the performance of their duties. All that the men have to worry about is faithful attention to their duty.

A lawbreaker is a lawbreaker, regardless of affiliations or connections. As far as can be observed, the Detroit Police Department employs conventional methods known or practised by the large city police departments. Such practises as maintaining a continual watchfulness over banks by automobiles patrolling from one bank to another as many times a day as possible, and the use of high-powered automobiles, fully manned, which respond to calls as quickly as does the fire department apparatus, are evidence of alertness on the part of the department, rather than an innovation of unusual or brand-new methods. There is no doubt, however, that the support given the rank and file of the Police Department has put the men on their mettle and has created a morale which bodes ill for lawbreakers in Detroit.

Police Must Have Cooperation

It is agreed, however, that the Police Department is powerless to check or curb crime if the other agencies of the law-enforcing branch of the Government do not function properly. The apprehension of criminals is of little value if it does not bear fruit in the form of expeditious and decisive action on the part of the courts and the prosecuting attorney. The Detroit Police Department has had such cooperation.

Delay in disposing of criminal cases tends to defeat the purposes of the law. Punishment may be severe or lenient, but it should be swift and certain. When months, and frequently years, elapse before defendants are brought to trial, witnesses disappear, the circumstances of the case become indistinct, and the normal interest necessary to try a defendant with justice is lacking. Furthermore, the uncertainty of punishment tends to encourage an attitude of indifference, and even of contempt, on the part of criminals. It seems, therefore, that a prime requisite to the proper functioning of a criminal court is to dispose of its cases as expeditiously as possible, not alone to punish the guilty, but to vindicate the innocent. In Detroit, prompt trials have prevailed in the last two years.

The following table compares the length of time it took for cases to be disposed of in the criminal court of Detroit in 1921 and 1919:

COMPARATIVE TABLE SHOWING THE TIME CONSUMED IN DISPOSING OF FELONIES UNDER THE OLD COURT ORGANIZATION AND THE NEW

	1919		1921		Cumulative	
Weeks	Cases	%	Cases	%	1919 %	1920 %
1	31	2	2189	66	2	66
2	61	3	203	6	5	72
3	95	5	154	5	10	77
4	105	5	252	7	15	84
5	114	6	197	6	21	90
6	123	6	138	4	27	94
7	132	7	64	2	34	96
8	128	6	42	1	40	97
9	171	19	31	7	59	98
Over 9 Wks.	688	41	68	2	100	100
	1648	100	3338	100		

The above analysis of 3,338 felonies originating in the court since April 1, 1921, shows that 66 per cent were disposed of within 7 days, including Sundays and holidays, from the time of the arraignment on the warrant through the trial. In 1919 only 2 per cent of the cases were disposed of within that length of time. At the end of four weeks, 84 per cent of the cases were disposed of in 1921; in 1919, only 15 per cent.

How the Results Were Achieved

It may be interesting to know what makes possible speed and certainty of punishment. Wherein does the Detroit criminal court system differ from that of other cities and from Detroit's former system?

Prior to April 20, 1920, Detroit had the usual inferior and superior criminal courts, the Police Court and the Recorder's Court; the former having jurisdiction over the misdemeanors and over the arraignment and examination of felony cases, and the latter over the trial of felony cases and, because it was a city court, over ordinance cases. There were five judges, three in the Police Court and two in the Recorder's Court, each an independent and coordinate unit.

The law creating the new court provides the following features absent under the old dual organization:

1. A unified criminal court for Detroit. The Police Court was merged with the Recorder's Court.

2. A presiding judge, chosen by the whole

bench of seven judges for such term as is agreed upon, who "shall be charged with the general supervision and superintendence of the work of the court."

3. Power to establish and maintain specialized branches or divisions, as may be deemed proper and expedient by a majority of the judges.
4. Seven judges instead of five, with equal powers and jurisdiction.
5. Psychopathic clinic.

Of these distinctive features, the first two mentioned are primarily responsible for the improved functioning of the court. The responsibility for the handling of all criminal cases from beginning to end being vested in one court, an organization that is operated as a singular administrative unit under the "general supervision" of a presiding judge, has made for expeditiousness. Furthermore, assignment of cases by a presiding judge has permitted uniform distribution, eliminating congestion in any one division.

The benefit of unification is further exemplified by the fact that out of 2,487 felony cases where the defendants pleaded guilty, 1,539, or 62 per cent, were disposed of on the same day. This would have been impossible under the old dual organization of an inferior and a superior criminal court.

Justice Not Sacrificed to Speed

It is not intended to give the impression that everything is sacrificed to speed. Adequate time is given for preparation of cases, and adjournments are granted when necessary, but the usual dilatory methods are not tolerated or encouraged.

The Recorder's Court, in the last two years, has treated convicted persons, particularly those found guilty of robbery or burglary, more severely than was the practice heretofore, and has been criticised in some quarters for its uniform severity in these cases. The value or justice of short or long prison sentences is a moot question, and need not be discussed here. There is less crime in Detroit.

However, there is ample evidence that the court is making an earnest effort to dispose of cases so that the greatest good will accrue both to the community and to the individual sentenced. In the first place, an increasing number of offenders are being placed on probation. Secondly, but of greater import, is the use being made by the judges of the psychopathic clinic which is an integral part of the court. This clinic, under the direction of Dr. A. L. Jacoby, an experienced and competent psychiatrist, although in operation but a little over a year, has already demonstrated its possibilities for service.

In the last twelve months the clinic examined over 300 cases, men and women charged with felonies and misdemeanors. Before imposing sentence upon these offenders, the judges had before them a complete social history of the individual compiled by investigators of the clinic, a diagnosis of the physical and mental conditions, together with recommendations for treatment based upon the findings. It is the object of the clinic not only to give diagnoses in special cases, but to build up cumulative data that will indicate to the court and to all the law-enforcing agencies how and what constructive work can be done in reducing criminality and crime.

As the third side of the triangle, the prosecuting attorney's office has performed its function in the interests of law-enforcement. Cases are not lost, pigeon-holed, or played with. They are prepared for trial and tried without delay. In other words, the prosecuting attorney's office does nothing that will prevent a case from being tried or that will retard the progress of a case.

Improvement in Jury System

Another innovation in the Detroit criminology machinery worthy of mention is the improved character of the juror, made possible by the enactment of a new law in 1920. Prior to this time, jurors were required to serve for two months in the Recorder's Court, which meant that men with responsible positions were precluded from serving. The new law, sponsored by some of the judges of the Recorder's Court, reduced the term of service to two weeks, and, as a result, citizens from all walks of life are serving as jurors. The juries are more representative now, in that they also include the intelligent element of the community.

There is criticism of the court; but that is natural, because criticism always accompanies innovations. So long as such criticism is constructive and has as its main object improvement in a new and untried project rather than destruction because of supposedly minor defects, it is welcome and is a wholesome sign. Prior to the reorganization of the court, nobody paid any attention to the courts, and if there was less criticism than at present it was not because the administration of justice was perfect.

The reading of this article would lead to the conclusion that the low crime rate in Detroit is due to the method in which the agencies of criminal justice are functioned. Whether it is entirely due to that or not, it is difficult to state, because the causes of crime are many and complex. The fact remains, however, that the courts, the Prosecuting Attorney's office, and the Police Department are pursuing effective methods, and crime is low.

Forecasting the Future of a City

MANY city officials and chamber of commerce executives may be unaware that the Bell Telephone System has for years been making forecasts as to the growth of cities and planning for future telephonic developments in accordance with such predicted growth. The telephone company's engineers have been obliged to make their predictions not merely general but specific. By detailed studies of the cities in which their plants are located, they have been able to predict the change in the character of neighborhoods, location of new business centers and new industrial developments, suburban home sites, and the character of the population which will probably occupy the community six, twelve or twenty years hence. They have made an analysis of the city, know how many families it has, how many of them live in apartments, how many in flats and how many in separate residences, and have divided them into types based upon the amount of house rent they pay each month. Out of such data the engineer prepares his predictions in order that the company may develop its fundamental telephone system and anticipate the need for local service areas in the future.

From the subscriber's standpoint as well as from the company's, this service is important, for it means the refinement of guesswork in the matter of preparing for current capital investment for future needs. The company must be prepared to render service when the demand arises. It cannot wait for the demand to lay its cable. At the same time, it must not lay more cables than are likely to be needed, as the current subscribers pay rates enough to cover the interest charges on unused capital investments built in anticipation of future needs.

While in the nature of things many of the findings of these surveys and the original data upon which they are based cannot be made public in their entirety, it is the policy of the companies to cooperate with city officials, chambers of commerce and other organizations working for community betterment. In many cases telephone engineers have served as members of city planning commissions, and their knowledge of present conditions and their vision of the future have proved invaluable.

San Jose a Close Second in the Use of Radio

The adoption of the radio telephone as a means of transmitting chamber of commerce messages appears to have been made almost simultaneously at widely different points in the United States. In the June issue of The American City appeared an article by Miss W. E. Bacon, Assistant Manager of the Albany, N. Y., Chamber of Commerce, describing the Albany meeting of April 12. On April 21 the Brooklyn, N. Y., Chamber of Commerce was addressed by radio; on April 24 the Pittsburgh, Pa., members were welcomed in Toledo by a radio talk broadcast from Fort Wayne, Ind.. on April 26 occurred the radio talk from an airplane by Roy S. Smith of the Albany Chamber of Commerce, and on the same day Roscoe D. Wyatt, Manager of the San José, Calif., Chamber, broadcast from K. Q. W., Herrold's Radio Laboratory at San José, a talk on "The Valley of Heart's Delight."

If other prior claims to use of radio for chamber of commerce purposes can be made, The American City will be glad to hear of them, but it seems, so far as the present evidence indicates, that Albany had a slight lead, with second honors almost equally divided between members of Brooklyn, Pittsburgh, and San José Chambers.

Promoting Water-Works in Small Towns and Villages

"A water-supply is of course the most important requisite in a community of any size."—Fraser Brown, Lecturer on Finance, New York University

THE average community is keenly alive to its development in population, industry and wealth, and early experiences the desire for a water-works. The circumstances that make the construction of a public water-supply advisable are as follows:

1. Safeguard to health
2. Protection from fire
3. Convenience of domestic water-supply
4. Necessity of industrial water-supply

The loss and damage by fire, the diseases arising from unsanitary drinking water, the inconveniences of a home which has no bathtub, the embarrassments and enormous danger connected with the disposal of human excreta, the unsightliness of barren yards, the trouble and labor in securing water from springs or wells, the handicap to factories on account of lack of water-supply—these are some of the conditions which demand that communities give consideration to the building of water-works.

Sanitation is perhaps the first and most important object of a community water-works, although, strange to say, the object that appeals most to the public mind usually is fire protection. The spectacular effect of a fire makes a deep impression upon the average individual. He cannot help but wonder when the same danger may threaten him, and his thoughts turn naturally to a water-works as the logical means of protection. As a matter of fact, however, there would be little need of fire protection if the modern town or city tried to exist long without proper means of sanitation. The valuable homes and factories for which men need fire protection depend first upon the health of the community. Without proper means of sanitation they would cease to exist.

The Fire Protection Value of Water-works

Through all history one of the great enemies of mankind has been fire. The National Board of Fire Underwriters rate a water-works as of more importance in fire protection than a fire department, for the reason that a water-supply may be of some use without a fire department, but a fire department without a water-supply is practically helpless in case of fire. The plan adopted by the National Board of Fire Underwriters in rating cities in regard to their fire protection facilities is similar to the method of marking a schoolboy's examination papers where so much is taken off for every mistake. The sum of the maximum points of deficiency totals 5,000 and is divided in accordance with the relative values of the features as follows:

	Points
Water-supply	1,700
Fire department	1,500
Fire alarm	550
Police	50
Building laws	200
Hazards	300
Structural conditions	700
	5,000

In a city where the fire defences and physical conditions are excellent, there would be few points of deficiency, and the rating of one where conditions are as bad as possible would approach 5,000 points. The water-supply is given a weight of about one-third of the total requirements. It is considered as being of slightly more importance than a fire department, as a water system is of value for fire protection where there is no organized fire department.

Industry Needs Water

The advantages of having a water-works are not confined by any means to its service in the home. Some towns remain small because of lack of foresight in attracting new business. Industry welcomes with open arms a public water system in a community; in fact, there can be no real industry without some kind of water-works system. Should a proposed factory be faced with the necessity of providing its own water, the chances of its locating in some other community where a public water-supply system is in operation are very great. Wherever steam power, hydraulic power and similar factors are to be considered in an industrial plant, the question of water-supply becomes all-important.

Industry is not indifferent to sanitation. Where people congregate to work there must be provision for sanitation and health as there is in the home. In some respects the importance of sanitation in industry is greater than in the home because of the congregation of many people in a comparatively small space where uncleanliness and poor sanitation more easily develop. An epidemic of dysentry, according to an automobile concern in Michigan, resulted in a loss to the employees of $15,000 in wages and a loss to the company of $40,000.

Sometimes when the matter of improved health and lower death rate is brought up, citizens intimate that they are satisfied with their health records as they are. Many have used private wells and have never been sick from the water. But while they may not have had typhoid, they are always exposed to it. The man who makes a practice of racing trains to the railroad crossing often boasts that he has never been hit, but he usually "gets it" sooner or later. Many who suffer from the milder intestinal diseases seldom consider the fact that their water-supply was responsible. The argument that wells have been used for a number of years with no resulting typhoid, is not good. The chance of pollution is always present and it is not worth risking life on such a chance. Because a house has not burned down is no reason why the occupant should be careless with fire about the house. The same is true of typhoid and polluted springs and wells.

Arousing Interest in the Proposed Supply

It is an unfortunate fact that plans for public improvement frequently fail to materialize simply on account of public ignorance. Many cases can be cited where the great need of water-works was recognized by city officials and yet a proposed bond issue to pay for the improvements met with utter defeat at the polls. The remedy is public education. City officials, or whoever may be interested in the construction of water-works, literally must organize a sales campaign and sell the idea to the taxpayers. To successfully do this it is necessary that all the facts affecting the particular situation involved must be compiled, analyzed and digested and put in such form that their import can be grasped by the average citizen.

The first step is the employment of a competent consulting civil engineer. Experience has shown that it is most unwise for a small community to attempt a public improvement such as a water-works without the impartial and unprejudiced guidance of a consulting engineer. There are many engineers who make a profession of this kind of work, and no difficulty should be experienced in getting in touch with one of them.

A note of warning might be sounded here to insure that an engineer is employed who understands the principles of promotion. Cases are known where the preliminary reports of an engineer have been so technical and theoretical that neither the city officials nor the public were ever able to make head or tail out of them. What is desired is not a long technical report, but a digest of the salient facts which will appeal to the public. A water-works is a very human affair and should be so treated.

This information once accumulated, the campaign really gets under way. Some of the agencies commonly used are newspapers, public meetings, civic organizations, women's clubs, churches, business organizations, and the mail.

Newspaper Publicity and the Uses of Pictures

The local newspaper will usually be a willing and powerful factor in a campaign. The editor is generally a booster and he will be glad to publish all educational articles submitted to him on the new water-works. This is one of the first steps in arousing public interest. The next might be a mass meeting addressed by local business men who are familiar with the situation. Coincident with this development, the civic organizations, women's clubs, churches and business organizations should be interested and asked to take active part. At any time during the campaign, use may be made of the mail to carry messages direct to the homes of the voters. Experience has shown, however, that this "direct advertising," as it is called, can be best used as a clincher for a campaign.

An attractive leaflet can be printed at small cost as the campaign draws to a close and the date for the bond election approaches. This should be mailed direct to the home of the voter, where the interest already aroused will insure that he will study it.

It is probable that pictures, which constitute a universal language, will appeal to most of the voters. They are much more easily understood and have a greater appeal than text matter. Photographs of water-works in neighboring towns, compared with photographs in your local town showing local fire-traps, unhealthful accumulations of garbage, dangerous wells, and similar views can be used with enormous effect in the newspaper and on slides furnished to the local motion picture house. Health statistics of cities which have water-works and those which have not may also be gathered and compared, and a similar comparison of fire insurance rates appeals strongly to every one. Maps can be made of the proposed water lines and shown in the newspapers and motion picture shows.

The Clincher Booklet

Following is a series of questions and answers which may be used with some variations in the clincher booklet to be sent to the voter just before the bond election:

WHY VOTE "YES"?

The questions and answers given on the following pages have been prepared by the consulting engineers employed by the village, and these engineers personally guarantee correctness of the statements made. These are being distributed by the Council in an attempt to put before the voters the entire facts in the case, so that they may vote on the question intelligently.

1. Q. What kind of a proposed water-supply and distributing system is being planned for..........?

A. It is proposed to provide a drilled well or wells so cased off as to make almost impossible any contamination from surface water. The water will be taken from these wells, treated to make it safe for consumption, and placed into an elevated tank by means of a pump driven by electric motor or gas engine, and from this tank the water will be distributed under about 50 pounds pressure through the cast iron mains to be laid in practically all the streets in the town. On these cast iron mains will be placed between 30 and 35 fire hydrants, which will afford fire protection for practically every house and building in the village.

2. Q. Will this water be used for drinking purposes?

A. Yes. Each property owner will have the privilege of tapping or connecting into the cast iron main in the street in front of his property and thus secure running water for his kitchen and bathroom use, for use in sprinkling the lawn or garden, washing automobiles, etc., or for any other domestic use desired.

3. Q. How will each property owner be assessed to pay for the water which he may use on his premises?

A. Either by charging a flat rate to all consumers based on the number of hydrants or faucets which the property owner provides, or by each user's having a meter and paying so much per thousand gallons for all water passing through the meter. The plan of using meters is much preferred because when the property owner realizes that he pays only for so much water as he actually uses, he will be much less inclined to waste water than if he is paying a fixed sum regardless of how much he may use.

4. Q. What will it cost the average family per month or per year for the water used?

A. This will depend on the rate fixed by the Board of Public Affairs and may vary. ......(some neighboring town)......has a minimum meter rate of.... cents per month, which is equivalent to $........per year. This is less than.....cents per day. Even if double this rate were charged here, it would amount to less than.....cents per day.

5. Q. How is it proposed to pay for the installation of a water system for———(name of town)———?

A. On ......(date of election)......, the voters of the village will have the opportunity to approve or authorize the issuing of $...... in bonds. The money secured by the sale of these bonds will be used to pay for the sinking of a well or wells, for the erection of a pump-house, for installing the necessary pumping machinery, and for providing an elevated storage tank. In addition to the items above, which will be of permanent service to the entire town, a portion of the proceeds of the bond issue will be used in paying for the water-mains across street intersections and for paving a portion of the cost of "tie lines" or "circulating lines" connecting the ends of parallel water-mains, which should not properly be entirely charged against the corner lots along which they will extend.

6. Q. Will this $...... cover the entire cost of the supply system and the mains through which the water is distributed?

A. No. It is planned to charge against each property in front of which the water line is laid an amount equal to one-half the cost of the 6-inch cast iron main; the other half, of course, to be charged against the property on the opposite side of the street The amount charged against each abutting property owner can be paid for by the owner in ten or more installments. Assessment bonds will be issued to secure the money in anticipation of the collection of this assessment from the owner.

7. Q. What will this assessment amount to per front foot for a 6-inch main?

A. Approximately $...... per foot; that is, the owner of a 40-foot lot would be assessed $......, which he could pay $...... per year each year for ten years, with interest on the unpaid portion each year.

8. Q. How much would this interest average?

A. Approximately $......; that is the total average cost per year on a 40-foot lot would be $......

9. Q. Then the assessment against a man owning a 40-foot lot would amount to less than ....cents per day during ten years in which he was paying it off?

A. Yes.

10. Q. How will the money to pay off the $...... bonds be secured?

A. By an increased tax on each piece of property in the town.

11. Q. Can this increase be made and yet not increase the present tax of ....mills to more than ....mills?

A. Yes. The additional ....mills can be levied on the .... and thus secure annually approximately $.......

12. Q. Will this amount, set aside each year, raise money enough to retire $...... in bonds at the end of ......years?

A. Yes, and as the value of property in ....(name of town).... increases, the ....mills levy can be decreased and yet raise each year the necessary amount of money.

13. Q. Is ——mills a high tax rate?

A. No. There are ten taxing districts in ....(local or neighboring county).... which had a higher rate in 1919. The highest was ...., which had a rate of ....mills.

14. Q. Is it true that this increase in taxes really means that each property owner will have that much additional expense each year?

A. No. Each property owner who has his buildings insured will benefit by a decreased fire insurance cost, which saving will go a long way toward paying his increase in taxes.

15. Q. How is it known that such a decrease in fire insurance cost will follow the installation of a water-works system?

A. Consult any fire insurance agent and he will tell you that the rates for insurance in ......(name of town)...... are now fixed on the basis of ......being in Class...... as established by the ......Inspection Bureau. This same Bureau has stated to a committee from your Council that after the installation of a modern water-works system ......(name of town) ......will be placed either in Class...... or ......, and that the rates in Class...... or ...... will average approximately ......per cent less than the rates in Class ....

16. Q. What does this mean in dollars and cents on a residence property insured for $2,000?

A. On a 3-year policy it will mean a saving of $....

17. Q. What would the increased tax per year on a $3,000 property amount to?

A. $.......

18. Q. Then a man owning a 40-foot lot with house and lot valued at $3,000 and the house insured for $2,000 would have what additional expense put upon him by the installation of the water-works system?

A. His assessment for the water-main in front of his property would amount to less than ......cents per day, his increased taxes to pay off the $........ bond issue would amount to less than ......cents per day, and if he were using the water in his house, the cost of the water would amount to less than ..... cents per day. Thus, the entire cost to him for the installation of the system and the use of the water would be less than ......cents per day. The saving on his $2,000 worth of insurance would amount to a little over ...... cents per day, so that his net cost would be .... a day for the remaining 15 years.

19. Q. Then for an amount less than the cost of a good cigar each day, it will be possible to secure a first-class water-supply and distribution system for ...... (name of town) ...... and also pay for the use of the water?

A. Yes.

20. Q. Briefly then, why am I going to vote "Yes" on the proposed bond issue ......(date of election ......?

A. (1) Better fire protection will be given each one in town, which may mean the saving of my own home as well as that of many of my neighbors, should a serious fire be started.

(2) It will be possible to use a sanitary sewer system should the same be installed now or later.

(3) ......(name of town)......will be made a more healthful, and, therefore, a much more desirable place to live. With running water under pressure available for each house in town, values of all property will be increased. ......(name of town)...... will be a bigger and better and more prosperous town the year around.

(4) Finally, I have as much pride in my town as have the people living in other towns which have already built a modern water-works system. I am willing to do as much for it as anyone in the town, therefore I expect to vote "YES."

This report prepared, published and circulated by:

....
(Give name of consulting engineers,
....
City Council, Mayor or similar au-
....
thority.)

It is to be understood that most of the statements contained in these questions and answers are assumed as applying to an imaginary case, but many of them need only be changed slightly to meet local conditions, or other questions of a somewhat similar nature may be substituted.

With the bonds sold and the money in hand, the consulting engineer is recalled to the work, and the actual construction of the water-works is ready to begin. It is the consulting engineer's work to draft detailed plans and specifications for every phase of the proposed construction. Then bids are secured from contractors and the construction of a public water-supply is soon under way.

Acknowledgment.—Published through the courtesy of the American Cast Iron Pipe Company.

Schoolhouse Fire Hazards

Heating Apparatus; Defective Electric Wiring and Bad Flues Most Prolific Causes of School House Fires

THE majority of school fires are due to the heating apparatus. In the country schools heating-stove fires are frequently started by coals falling from the open doors after the teachers and pupils have gone. In the larger cities, where regular janitors are employed, the losses due to the heating hazard are less, but in the smaller places, where the work of the janitors is incidental, they fire up but once or twice a day, and the blazes start in their absence. Defective electric wiring and poor housekeeping are also prolific sources of schoolhouse fires, and the increased use of soft coal because of the fuel shortage, and of inferior grades of such coal, has led to many defective flue and sparks-on-shingle-roof fires.

Improved construction, better housekeeping and careful inspections are the principal remedies for these deplorable conditions. A tabulation of losses shows that the experience has been better in Ohio than in any of the other states considered. This is attributed to the superior building laws of that state relating to schoolhouses, which were enacted after the burning of the Collingwood school, in which nearly 150 children lost their lives. Ohio requires that all school buildings more than one story high must be of fire-proof construction, and the fire prevention regulations are strictly enforced by the State Fire Marshal, who also makes specially careful inspections of schoolhouse risks. Other states and municipalities should not wait until they have a similar holocaust before safeguarding the lives of their children.

The Anti-Litter Movement in America

By W. S. McGrane

Manager, Anti-Litter Bureau, Merchants' Association, New York, N. Y.

ALMOST every city and town in the Union has within the last few years had its attention called to the fact that clean-up work was necessary. For the most part, the thought has been crystallized into a spasmodic attempt usually put into force each spring and known under the title of Clean-up Week, Fire Prevention Week, etc.

Little or no cognizance has been taken of the fact that immediately after such spasmodic attempts, conditions often become actually worse than before. And yet every municipality is satisfied apparently to spend hundreds, perhaps thousands, of dollars each spring to make the town clean for one week, when for a smaller expenditure it could establish a permanent Anti-Litter Bureau operating under the chamber of commerce or board of trade to keep the town clean for the whole year.

A competent manager and a stenographer with quarters in the meeting room ot the Chamber of Commerce are the only force required. The work is best divided into two classes—educational, and inspectional and report. In the former the manager enlists block captains from among the students studying civics in the high schools. These students report to the Bureau cases of violations of ordinances which they cannot of themselves correct. The Bureau acts as a clearing-house for the complaints and forwards the reports to the particular city department involved. In the latter case the manager himself makes inspections, correcting conditions wherever he can, or forwarding the complaints through his office. The Boy Scouts and civic organizations of the town should likewise be interested to report, regular testimonials being given for good work, and meetings arranged for general discussion of individual problems.

The nature of the complaints will vary according to the size, character of development of the town, number and nationality of the citizens, etc. In the big town we shall find that uncovered garbage cans,

UNSIGHTLY LOTS LIKE THIS BEHIND BILL-BOARDS FURNISH ARGUMENTS FOR ANTI-LITTER CRUSADERS

IT IS HARD TO HAVE REAL CIVIC SPIRIT ON THE SAME STREET WITH THIS

street litter, littered fire escapes, dead animals in the street, exposed foodstuffs, expectorating on the sidewalk, etc., are among the more common violations. In the small town broken guard-rail fences, unmuzzled dogs, overflowing cesspools, etc., may be the principal violations. In fact, every city and town will have its own individual problems and probably no two will be alike.

The problem involves the study of the city, its inhabitants and their habits. Often the chamber of commerce is not in harmony with the city administration. Great care should therefore be exercised to "sell" the city officials on the ground that the Anti-Litter Bureau is trying to help them and that a mutually cooperative spirit is best for all concerned.

The manager should use a great deal of discretion before forwarding complaints and should be absolutely sure of his ground. He must not criticize or find fault, but at the same time should be tactfully insistent. No more harm can be done a good cause than by over-enthusiasm, and it must be remembered that in this work, more than in any other, human inertia and indifference must be fought and conquered, and without causing friction.

The city or town that can afford the services of a competent and trained manager to do this work will find that sooner or later a gradual change will be felt. It will be slow, up-hill work, and will require diligent application night and day. It is only a matter of time, however, when the slogan "Every day must be clean-up day" will be crystallized into action and the useless clean-up week eliminated. When that time comes, we can eliminate litter.

Kentucky Adopts City Planning Law

When the Governor affixed his signature to the city planning bill, Kentucky stepped into the column of states having real city planning laws. The new act affects Louisville, the only first-class city in the state, and the second-class cities of Lexington, Newport, and Paducah. It provides for a planning commission in each city to have charge of systematic physical development and to prepare a survey of the city with the necessary maps. All future improvements in the way of cutting through streets and alleys, and all additions to the city, must thereafter conform to the plans adopted by the commission.

All persons who are engaged in laying out additions or opening up new streets may appeal from the commission to the circuit court, but excepting in cases where courts have for cause overruled the determination of the commission, the county clerk may not receive for filing of record any plats that do not conform to the commission's maps.

Detroit and Grand Rapids Working for Better County Government

By William P. Lovett

Secretary, Detroit Citizens League

UNDAUNTED by the failure to secure by July 1 the 105,000 signatures to the petition to put on a state-wide ballot a constitutional amendment permitting commission government by counties in Michigan, the progressive citizens of the two big counties, Wayne and Kent, which contain the cities of Detroit and Grand Rapids, are planning to go ahead with their own program based on the proposed amendment.

The latter was the result of two years of study and work by a Citizens State Committee which tried to get the question submitted a year ago by the State Legislature; it passed the Senate, but was then smothered by county politicians in the House.

In brief, it provided that any county whose people cast a majority vote for it might adopt a commission plan of county government, with three to nine commissioners, elected at large or by districts, who were to discharge all administrative functions, and who were to appoint all other county officers. The amendment would have made no change in taxation or the judiciary, but would have enforced the board-of-control principle, leaving county supervisors nothing to do but to equalize taxes and attend to township or other local duties.

The Wayne County Committee will soon meet to decide upon the future program for Wayne County. It is assumed that the constitutional amendment, permitting relief for Detroit and Wayne County by substituting a board of control such as exists in the city of Detroit, for the impossible board of 97 county supervisors, will again be presented. It is also recognized that the failure of the petition campaign in the state furnishes a turning-point at which new ideas, from all possible sources, will be invited. Several representative Detroit citizens who have helped the state program, because it would give relief, in time, for Detroit, are ready with new proposals, calculated to solve the problem for this growing city.

The supervisor system in Michigan counties has been carried to such an extreme that Wayne County, with Detroit, has 97 supervisors. It follows that the real business is done through subcommittees, while the control of the system is usually taken over by a few politicians who are accountable, not to the people, but to other politicians.

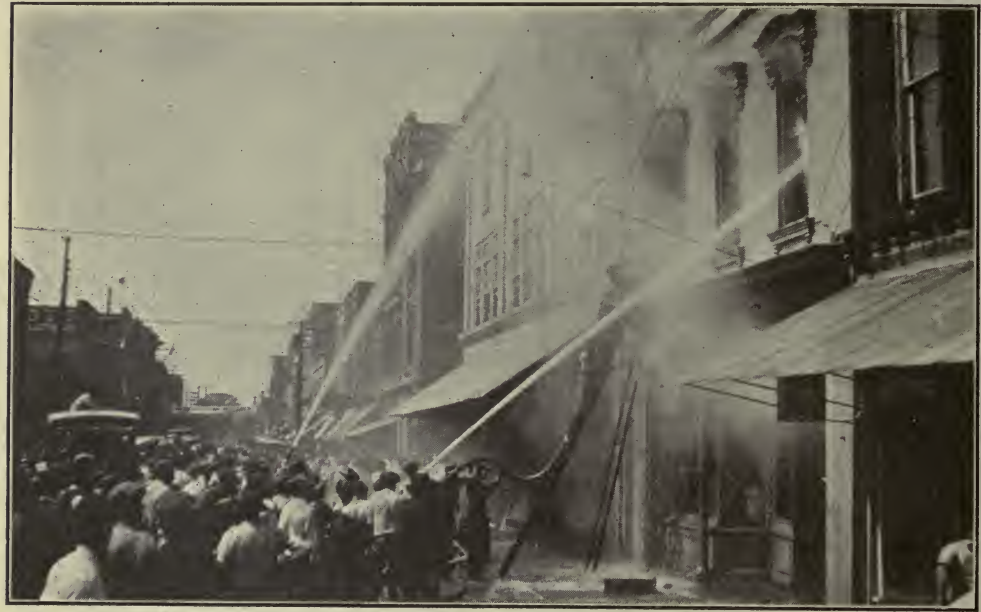
Many counties also have auditors, three in number, who form a third area of political operations, but who likewise play the good old game of "passing the buck." In addition, there are seven constitutional offices filled by direct popular election. Thus, with three or four areas of separate power, it is impossible to fix responsibility, and "government by suspicion" is the rule.

Naturally the evils of the old system show up most glaringly in urban counties, where modern city charters are inevitably in vivid contrast with the ancient methods of county government. Michigan has 30 or more commission and general-manager city charters in full operation, so it is natural that demands for simple, centralized control of government should be heard in the counties.

While proponents of the new idea urge efficiency, economy, and more direct popular control, to be secured by the commission plan, the opposition plead for "the rights of the people" at the polls, said rights being in peril, of course, unless the people—which means actually the politicians—have just as many elections and just as many elective offices to be filled as possible. It is a case of the autocracy of the politicians against the democracy of the short ballot, direct popular control, and clear accountability on the part of all officials.

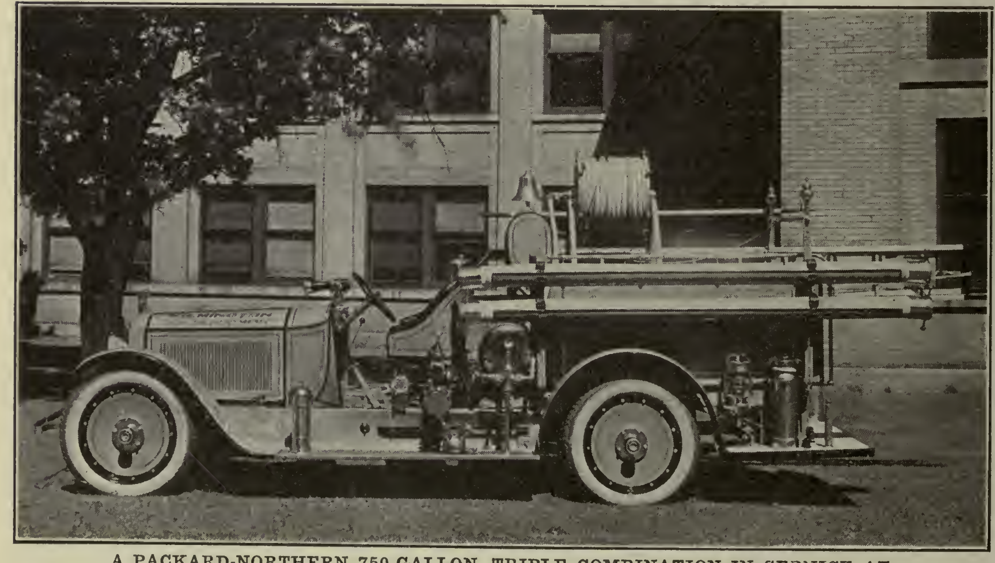
In its campaign, the State Committee found its greatest obstacle in public ignorance of county government, plus indifference to any real reform. This condition gives the petty politicians their chance to oppose any change in system. But the committee has mapped out a five-year program and will stick to it.

Good Streets, Clean Streets, and Public Safety Through Motorization



FIRE APPARATUS AT WORK? NO, A MOTOR FLUSHER HELPING OUT

The "South Bend" flusher, which can just be seen in the picture, was working seven blocks from the scene of this fire in Washington, N. C., when the alarm sounded. It arrived at the fire before the regular apparatus and had the first stream playing on the blaze



A PACKARD-NORTHERN 750-GALLON, TRIPLE COMBINATION IN SERVICE AT WILMINGTON, N. C.

The chassis of this machine is a standard twin-six Packard. The equipment consists of a Northern combination chemical and hose outfit and a 750-gallon pump. The machine can attain a road speed of 70 miles an hour, and in its 12-hour Underwriters' test handled 750 gallons at the standard pumping pressure of 120 pounds

THE CITY OF COLORADO SPRINGS, COLO., USES ITS HOLT TRACTOR AND AUSTIN-WESTERN GRADER FOR MAINTAINING ITS ROADS
Photograph furnished through the courtesy of Frank O. Ray, City Engineer, Colorado Springs

Two Seconds to Avoid Mishaps

No country road should be made with curves that do not permit vision 200 feet ahead, because two cars approaching in opposite directions at 30 miles an hour will meet within two seconds after they are 200 feet from each other.—A. R. Hirst, State Highway Engineer, Madison, Wis.

AN AUSTIN-WESTERN PICK-UP SWEEPER WITH GUTTER ATTACHMENT, USED BY THE DEPARTMENT OF PUBLIC WORKS, BINGHAMTON, N. Y., FOR KEEPING IMPROVED PAVEMENTS CLEAN

Chamber of Commerce Activities in Public Affairs

The Friendly Town of Mitchell

Mitchell, S. Dak.—Mitchell's new tourist camp shelter is one of the best buildings of its kind in the Northwest and is rapidly giving Mitchell the reputation of a friendly town. On all roads approaching the town, a little white arrow points the way to the camp.

Previous to this year, a tourist camp with ordinary accommodation was provided for tourist travelers. So well patronized was the camp, so appreciative were the tourists, and so beneficial to trade was the camp, that the Mitchell Chamber of Commerce last fall took the initiative in promoting the erection of a real tourist shelter. Accordingly, the camp building was erected during the winter months, at a cost of $3,200.

The equipment of the new camp provides without charge all the comforts as well as the needs of the tourist. The building is lighted by electricity and furnished with gas stoves. Shower-baths and laundry are available to all who will use them. Tables and chairs are provided in case the weather is too unpleasant for outdoor meals.

In addition to all this mechanical equipment, the human element of friendliness appears in the form of police protection to work against theft from cars and tents, and in the form of "greeters' committees." Every day some one is available constantly to meet the visitors and to help them in every way possible. The members of the Kiwanis, Rotary, and Lions Clubs divide this work among themselves in such a way that no one person's work and time suffer interruption seriously.

The Good Roads Committee of the Chamber of Commerce is in charge of the camp, and for its conduct has formulated the following regulations:

"The camp ground shall be open to all tourists.

"The use of the tourist shelter, except toilet facilities, shall be limited to tourists only.

TOURIST CAMP SHELTER, MITCHELL, S. DAK.

"No tourist shall be permitted to camp therein for a period longer than five consecutive days.

"No tourist shall be permitted to remain in the camp while suffering from an infectious or contagious disease.

"No minors under the age of 16 shall be permitted to use the camp grounds unless accompanied by their parents, guardian, or proper chaperon."

New High School for Scottsbluff

Scottsbluff, Nebr.—A $300,000 high school is assured Scottsbluff as the direct result of an educational campaign and bond election sponsored by the Chamber of Commerce. Public opinion was very much against the voting of these bonds at the time, but the Chamber's educational campaign succeeded in turning the tide of sentiment, with the result that the issue carried two to one at the polls.

The Chamber also undertook to raise $50,000 in pledges to cooperate with the Methodist Hospital Board in purchasing and completing an unfinished six-story building to be equipped as a hospital. The Hospital Board is giving $100,000 in addition, and Scottsbluff will shortly have a first-class hospital, something it has long needed.

Hester Ruckman,
Secretary, Scottsbluff Chamber of Commerce.

Milwaukee Embarks on Street-Widening Program

MILWAUKEE, WIS.—The approval of a bond issue of $2,500,000 on April 4 assures the opening of a much-needed large artery to carry the growing traffic through the heart of Milwaukee.

The $2,500,000 is to be used for the widening of Cedar-Biddle Street, beginning at Prospect and Juneau Avenues and ending at Grand Avenue and Ninth Street and State and Ninth Streets. It is planned to widen the street to 160 feet from lot line to lot line, including in this both roadway and sidewalks. Cedar Street will be widened to the south and Biddle Street to the north, and a bridge spanning the river will connect the two streets, making a continuous highway from the civic center to the lake, with connections at the lake end to Prospect Avenue, and at the upper end, at the civic center, to Grand Avenue and State Street.

The procedure known as excess condemnation, authorized by an amendment of the state constitution in 1912, will be employed in the proposed street widening, for the first time in Wisconsin. The improvement of Cedar-Biddle Street will greatly enhance the values of abutting property, and as the city is responsible for this increase in values, it will avail itself of the increased values it has produced, to finance the project itself. Excess condemnation enables the city to accomplish this. Land in excess of the absolute requirements for street widening to the south of Cedar Street and the north of Biddle Street will be condemned and, when the street widening has been completed and the improvements put in, the excess land, then abutting the widened and completed highway and greatly enhanced in value, will be resold. A detailed and intensive study has been made of the finances involved, and reveals that the cost of this whole magnificent project can be met by the sale of the excess land and by the assessment of benefits to property in the adjoining area.

Citizens and officials who have been striving for the principle of the orderly physical development of Milwaukee have cause to be encouraged. But the task is only just begun. The utmost caution is necessary that it may progress properly. This is a matter of far-reaching importance and one in which the civic forces are showing their continued interest by constructive criticism and active support.

LEO TIEFENTHALER,
Civic Secretary, The City Club of Milwaukee.

Six Bond Issues Carried by Chamber

LONG BEACH, CALIF.—Bond issues totaling $725,000 were carried at an election, April 18, through the educational work of the Long Beach Chamber. This money will be expended for the following civic improvements:

A public hospital, to be erected at a cost of $100,0000

Public comfort stations in various parts of the city, $50,000

A sewage disposal plant, to cost $100,000

A garbage incinerator and disposal plant, to cost $125,000

A fire alarm system and station houses and fire-fighting equipment, to cost $150,000

A new city hall, to cost $200,000.

LYNN W. BALLARD,
Secretary, Long Beach Chamber of Commerce.

Financing Secondary Roads

QUINCY, ILL.—An effective road-building campaign was recently inaugurated by the Quincy Chamber of Commerce for the construction and repair of gravel lateral roads to connect with the state roads. As part of the preliminary publicity, wide distribution was given to a small sheet containing on the front drawings of four different types of roads, and on the back the specifications for the first type, which was designated as the Chamber of Commerce type. The method of financing was as follows:

The county agreed to grade the roads and put in the necessary permanent bridges. The farmers living within a half-mile on each side contributed 80 cents per acre of their holdings, either in money or in hauling. The farmers living more than a half-mile and not more than a mile away contributed 60 cents per acre in money or hauling; the farmers living more than a mile and not more than a mile and a half from the road, 40 cents per acre; the city individual contributed from $1 to $10 per mile, up to 50 miles per year. This provided funds for 1,000 or more loads of gravel per mile, and brought in immediately enough money for 50 miles of gravel roads, which will be completed, it is hoped, this year.

CHARLES D. CENTER,
Secretary, Chamber of Commerce.

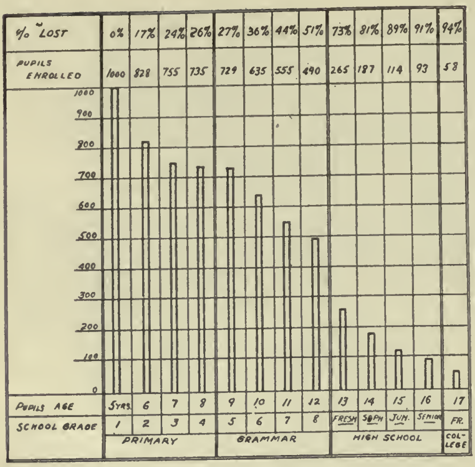


CHART SHOWING NUMBER OF PUPILS PER THOUSAND ENROLLED AT AGE 5 WHO REMAIN IN THE NEWARK SCHOOLS EACH YEAR

Newark's Back-to-School Campaign

Newark, N. J.—After a study of the school enrollment in Newark it was found that out of every thousand boys entering grade schools there was a 73 per cent loss from the grade schools and that 91 per cent dropped out before going to college. These figures were ascertained by consulting official school enrollment records.

The Boys' Work Committee of the Newark Rotary Club realized that the loss of 73 per cent ought to be stopped, and this was the cause of the Back-to-School Campaign.

There were 1,740 boys who graduated from the elementary schools in our city last year; 1,327 of them entered high school. The 413 boys who dropped out are the ones we are most interested in, and the Rotary Club therefore worked out a program to induce them to continue their education.

The plan adopted was to send a personal letter to each boy graduate of the grade schools, explaining why the Club was anxious for him to continue to gain more education. Enclosed in this letter was a postal card asking his intention and whether he would like to be interviewed by a Rotarian. The result was that over 200 boys responded, requesting interviews with a business man to help solve the individual problem regarding further education. The outcome of the interviews has been most encouraging.

A number of boys who could not see their way clear to further education because their parents could not afford it, were placed in positions for after-school and Saturday work. Boys who had thought of taking a business course for two years or a general course, after being interviewed by a Rotarian changed their plans and decided to finish high school. Those who were anxious to go to college and could not afford it, were shown how they could work their way through.

Teachers in the schools have been made to realize that busy business men are interested in the educational welfare of the boys of Newark. Parents of boys from foreign homes have been given a different view of the value of education.

The plan was simple, and the cost less than $50. In brief, the plan was as follows:

1. The personal letter and card were sent.
2. As the replies were received, showing those who were not going to high school, a special letter was sent urging them to reconsider and to interview one of the Rotarians.
3. The boys who requested interviews were assigned to Rotarians, and a report of each interview was handed in. At the completion of the first interview, many of the boys asked to be interviewed later, and others have been corresponding with the assignee.
4. Previous to the campaign, many firms with representatives in Rotary donated advertising space to give us an opportunity to tell our story to the parents and public as well as to the boys. These advertisements brought replies from parents and many boys from Newark and vicinity.

A plan is now under consideration to duplicate this campaign this fall, and also to have prominent business men of our city write letters to the school clerks, explaining in a brief way why they believe in an education at least through high school. This file of letters will be placed in the hands of the graduating boys and girls during the last two months of the school term, so that it may be read over by them, with the idea that the letters are to help them decide to continue from the elementary school through the secondary school grades.

Another added feature in the campaign will be the supplying of speakers on various professions and vocations for the different elementary schools. A question box will be placed in the principal's office, where boys or girls who are interested in particular vocations can make a request for a personal interview with a business man or woman who is engaged in the vocation in question. Such interviews, we believe, will bring out the requirements for an education, the cost, and what is expected in the particular line of business when the education has been completed.

ROBERT K. HANSON,
Metropolitan Boys' Work Executive, Rotary Club, Newark, N. J.

Arkansas City's Landing Field Now Municipal

Arkansas City, Kans.—The Chamber of Commerce of Arkansas City believes that commercial traffic through the air is certain to be an accepted method of transportation. The only thing lacking is the development of landing fields in sufficient numbers to assure the pilot of a place to land when he desires or when necessity compels a landing. If municipalities can be aroused to the importance of the development and maintenance of landing fields with necessary equipment to give service, air navigation will go forward with great strides.

Believing this, the Arkansas City Chamber of Commerce began in 1919 to consider the question of a landing field for Arkansas City. An excellent location was found on a hill north of the city, and a lease was obtained by the Chamber of Commerce and the Williams-Hill Aeroplane Company giving that company the commercial rights of the field, with the obligation on their part to use their planes to advertise the fact that the field existed. On each of their three planes was painted, "Williams-Hill Aeroplane Company operating from the Arkansas City, Kansas, landing field. Established and maintained by the Arkansas City Chamber of Commerce."

This company in 1920 put out a flying circus which exhibited in approximately one hundred different cities before thousands of people. In December of 1920 a big air frolic was staged on this field, which attracted sixteen commercial planes from five states, Texas, Oklahoma, Missouri, Nebraska, and Kansas; ten army planes also came to the frolic as guests of the Chamber of Commerce. Thousands of people from miles away drove to Arkansas City to observe this frolic, the first of its kind in the Middle West. During 1921 the Williams-Hill Aeroplane Company promoted a great many air frolics in Kansas and Oklahoma, which further identified this landing field.

The result of eighteen months of such special activities was that Arkansas City became known far and wide as an aviation center. Planes traveling across the country made it a point to come by way of Arkansas City, where gas, oil, and service were available.

But, best of all, it convinced the business interests of Arkansas City of the value of a landing field, and a demand grew that the city authorities take over the control of this field, making it strictly a municipal project. As a result of this demand, a bill was prepared by Arkansas City business interests and presented to the State Legislature of 1921 making it legal for a city government to levy a tax for the purpose of maintaining a municipal landing field. This bill became a law, and the field here is now the Arkansas City Municipal Landing Field under the direct control of the City Commission, with the Finance Commissioner as superintendent of the field.

In April, 1921, a fund of $4,300 was raised to erect a hangar and repair shop on this field. The hangar was of wood construction and capable of housing ten planes. It was unfortunately destroyed by fire in less than thirty days after completion, with the loss not only of the building but of five planes and much repair equipment. This misfortune proved the unfitness of wood construction. A movement is now on foot to provide a steel hangar, or hangars, and workshop.

Recently an occasion arose wherein a consultation on an extremely vital surgical case was necessary and a noted surgeon in Wichita, Kans., was called into this consultation. This man entered a plane at Wichita and 35 minutes later entered an automobile which was waiting for him on the landing field at Arkansas City. The distance is 50 miles as the crow flies. As he entered the plane at Wichita he asked the pilot if he knew a safe place to land in Arkansas City, and the pilot replied that there was no need for worry for "there is a municipal landing field there."

This surgeon uses a plane for such oc-

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The "Caterpillar's" field of usefulness is by no means limited to road making. There is a Caterpillar"* of size and capacity for every power need. On farm or ranch, in the mining, oil and lumber industries, for snow removal and other civic work—wherever power and endurance are at a premium, the "Caterpillar"* has no real competitor.*

Holt has pioneered in building tractors for many years Our engineers have kept in close contact with the condi- tions encountered by highway officials and contractors o their road making, dirt moving and hauling jobs in ever part of the world. This first-hand engineering experience combined with our unequaled production facilities, has mad the "Caterpillar"* the standard tractor the world over "Caterpillars"* will master the toughest going and operat continuously and profitably where no other method o machine can work at all. Their power and endurance mean that the job will be done in less time, with fewer men, an at the lowest cost. Other tractors, even some that superficially look like the "Caterpillar,"* may be bought at lower price but experienced users will tell you that on th basis of cost per horse-power per year the "Caterpillar" is actually the *cheapest buy on the market.* Send for copy of our booklet, "Caterpillar Performance."

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casions on the average of once a week, and he made the statement that there were dozens of business men in Wichita who would make use of planes for transportation within a radius of 500 miles if they knew that the pilot would be able to find a landing field, marked, on which he could be assured of a safe landing, but that it was too hazardous to have to pick out a pasture or alfalfa field in which to land.

To further identify the city from the air, we are placing the name of the town on the largest roof we can find in the city, located near the railroad. This sign will be in white on a black background in letters 12 feet across, in order that it may be conveniently read by a pilot in the air at 1,000 feet.

It is difficult to convince communities that the question of transportation by air is no longer an experiment and that it will surely be of commercial importance. They fail to realize that the one big, outstanding obstacle to rapid progress is the lack of landing fields in sufficient numbers and quality to insure safe landing and necessary service. Not until municipalities begin to realize this truth and develop landing fields will private money begin to interest itself in transporation by air.

O. B. SEYSTER,
Secretary, Chamber of Commerce.

Educating the Public on Traffic Rules

South Bend, Ind.—The South Bend Chamber is actively at work making the motoring public acquainted with the new city parking ordinance. Two policemen on full time have been assigned to enforce the ordinance, but obviously cannot reach all the motorists within a reasonable time. So the Chamber of Commerce, which is supporting the ordinance, has been furnishing, through the Boy Scout Council, a group of boys each day after school and all day Saturday to devote their time to explaining to automobile drivers the correct and incorrect methods of parking. These boys furnish each driver with a copy of the ordinance and, if he has been guilty of violating any part of it, a card on which the violation has been checked. If the owner is not in evidence, the card is placed on the car, with a copy of the ordinance attached.

The Police Department has expressed its appreciation of the work that has been done by the Chamber through the boys, and the Chamber in its turn is satisfied that the more strictly the ordinance is enforced, the more satisfaction it will create. Already the plan is working out very satisfactorily.

FRANK J. GREEN,
Manager, Chamber of Commerce.

You are violating the Parking Law of the City

See the reverse side of this card. The rule which you have violated is marked X.

Your number has been taken and a record of the violation has been made.

The Police Department respectfully asks that you learn and obey all *Traffic Laws.*

☐ 1. Your car was parked here more than one hour.

☐ 2. You did not park at an angle of 45 degrees with the curb.

☐ 3. You did not park parallel with the curb and within 2 feet of the curb.

☐ 4. You parked within 15 feet of a fire hydrant.

☐ 5. You parked within 25 feet of a Safety Zone.

☐ 6. You parked your car with its left side next to curb.

☐ 7. You parked your car farther than 2 feet from the cars nearest to it.

☐ 8. Please call at Police Station.

TRAFFIC VIOLATION CARD USED IN EDUCATING DRIVERS IN SOUTH BEND

Consider Well the Question of Health

The public drinking cup is forbidden by law in many states—because it is a menace to the public health.

MUELLER Sanitary Drinking Fountains

comply with the law—insure freedom from contagion—are absolutely sanitary and hygienic—are practically fool-proof and require no attention.

No. E-3705 here shown is one of many models—in both Wall and Pedestal patterns—all of the bubbling type—all of *MUELLER* standard construction.

Descriptions and prices on request.

H. MUELLER MFG. COMPANY, DECATUR, ILL. PHONE BELL 153

Water, Plumbing and Gas Brass Goods and Tools

New York City, 145 W. 30th St., Phone Watkins 5397 San Francisco, 635 Mission St., Phone Sutter 357
Sarnia, Ontario, Canada

Mueller Metals Co., Port Huron, Mich., Makers of "Red Tip" Brass Rod; Brass and Copper Tubing; Forgings and Castings in Brass, Bronze and Aluminum; Die Castings in White Metal and Aluminum; also Screw Machined Products.

Omaha Volunteer Traffic Officers Prove Valuable

Omaha, Nebr.—Two thousand arrests and fines that range from $1 to $500, and a 50 per cent reduction in automobile accidents, is the record made by Omaha's volunteer traffic officers during the past two years.

Omaha organized her citizen constabulary in 1920. In a short time 240 business men were "sworn in." These men were given the title of "Volunteer Civilian Officers" and were subject to the call of their superior officers. As this group was too unwieldy to handle with efficiency, in 1921 the organization was reduced to 180, commanded by 8 captains under the direct supervision of the Chief of Police of the Omaha Police Department.

The Omaha Chamber of Commerce meanwhile had incorporated within its organization a Traffic Safety Committee with a paid secretary devoting his full time to this movement. The citizen cops were given intensive instruction in the state laws and city ordinance regulating automotive traffic. They were called only when needed, and special 'drives" against violators were put on at intervals. Chief M. F. Dempsey took citizen cops individually and gave them private instructions in various policing systems. In selecting the officers, reliability, honesty, character and diplomatic ability were considered in each candidate.

The "golden rule" summons has proved successful in Omaha and has done much to expedite the work of the Police Judge. When a violator is hailed to the curb by a volunteer officer or a city policeman, he is handed the original of the summons and is told to report in police court to answer charges on a specified day. The officer retains a duplicate of the summons, from which the court record is made. The violator, unless he has done something very criminal or negligent, is allowed to proceed. The summons is very rarely disregarded, and when it is, a warrant for the immediate arrest of the violator is issued.

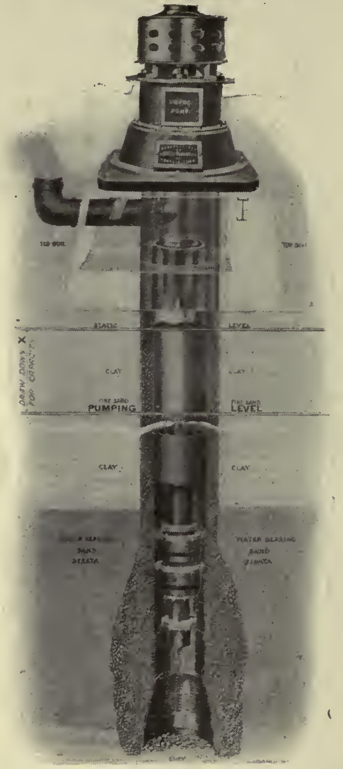
The function of a corps of volunteer officers coming from civilian ranks must necessarily confine its activities to work along educational lines. With that thought in mind, a program of educational work in the public and parochial schools of Omaha was undertaken by the Traffic Safety Committee of the Omaha Chamber of Commerce. The Superintendent of Education was furnished by this committee with object lessons and talks, which he sent out weekly to the various school principals, who in turn passed them on to the grade teachers. These lessons contained an element of play which tended to interest the pupil in the proposition. Schools bordering on busy thoroughfares were asked to appoint a corps of boys, preferably those experienced in Boy Scout work, to act as traffic officers in the morning before school, during the lunch hour and after school. These boys were stationed in the streets at intersections near the school and were furnished with blanks supplied by the Traffic Safety Committee containing a list of various common offenses, such as speeding by the school, noisy cut-out, etc. The boys were instructed to take the numbers of cars thus violating the laws and then turn them in to the Secretary of the Committee. The owners of cars were located by the numbers, and letters were written them from the Chamber of Commerce office stating the facts and asking their cooperation in eliminating accidents to school children by observing the ordinances. In no case is the schoolboy officer allowed to issue summons. After a person has been reported three times, he is called by phone and warned that the next offense will bring an arrest.

Educational work was further carried on by means of motion pictures in the theaters. The theaters situated in the residence sections of the city where the greater number of pedestrians live were the most efficacious.

The newspapers of Omaha are assisting the Police Department and the Traffic Safety Committee. Speakers are sent out from time to time to various civic organizations, calling attention to the old laws, and to the new laws as they are put into effect.

The corps of volunteer traffic officers are called together by order of the Police Chief once each week. They meet at the central police station and are assigned to various stations throughout the city where automobile traffic is dense. For instance, one week is given to the matter of lights under a recent Nebraska state law regard-

Layne Vertical Turbine Pumps *for* Deep Well Pumping



The remarkable savings over other types of well-pumping installations are due to the much greater water separating area exposed to the waterbearing formation by our large diameter wells, which is increased to still greater effective diameter by surrounding it with gravel. The gravel permits much more rapid water percolation to the wells than the original water-bearing strata. It acts as a filter, permitting large volumes of water to flow into the well and at the same time effectively restraining the sand.

The Layne scientifically constructed well screen with its much greater area of perforations than is secured with ordinary perforated casings, permits large volumes of water to pass to the inside of the well with very little resistance, which means a minimum pumping head in the well. That is why it is possible with a Layne gravel-wall well to pump twice as much water from a given water stratum and to maintain a smaller pumping head than in an ordinary well delivering one-half the water.

Layne scientific methods of water well construction and development of water from subterranean sources are the result of 35 years of constant improvement on the old haphazard and unscientific methods of drilling water wells. We can truthfully say that we are the only company in the world today that has applied the same intelligent efforts to improve methods of underground water development that have been applied to other processes, seeking to develop natures forces and assets.

Illustrated literature on guaranteed Water Supplies and Layne Vertical Turbine Pumps will be sent free on request.

LAYNE & BOWLER COMPANY

MEMPHIS **TENNESSEE**

ing the proper focusing of lights and the lighting equipment of automobiles. The officers are instructed to issue summons to every driver whose lights do not meet the specifications of this law, or who is running the car with only one headlight, no tail-light, or no lights at all.

On night work, four or five men are sent to one location and scattered over a distance of two blocks. These men are equipped with search-lights, and they flash signals from one officer to another as the cars pass them without tail-lights. The cars are drawn in to the curb and, when possible, the drivers are given an opportunity to adjust their lights in conformity with the law. In other cases they are issued summons to appear in Police Court at a stated time, and are there fined according to provisions of the law.

On December 6, 1921, a packing-house strike necessitated the sending of every available police officer to the packing-houses. The Chamber of Commerce volunteer traffic officers were called upon for traffic duty at busy street intersections. Within twenty minutes after the call was sent to the Secretary, seventeen volunteer officers had taken their places on street corners. Working in two shifts each day, these volunteers directed all street traffic for a period of six weeks without a cent of expense to the city. Traffic moved as usual, without a single accident.

The Police Department, in conjunction with the Traffic Safety Committee, has sent letters to all concerns employing paid drivers, asking their cooperation in this movement, and all concerns operating automobiles are insistent that their drivers use every precaution in handling their cars.

A statement by the Omaha Chief of Police follows:

> "The distressing loss of life and economic loss that is sustained through the operation of automobiles must follow its natural evolution, but I believe that through awakening the citizens to their own responsibility we have accomplished a great deal by handling this matter, not as a sporadic attempt, but as a continuous drive towards the education of automobile drivers."

MONTAGUE A. TANCOCK,
Manager, Bureau of Publicity, Omaha Chamber of Commerce.

CITIZEN TRAFFIC COP AT WORK, OMAHA, NEBR.

Tax Inequalities Exposed by Chamber

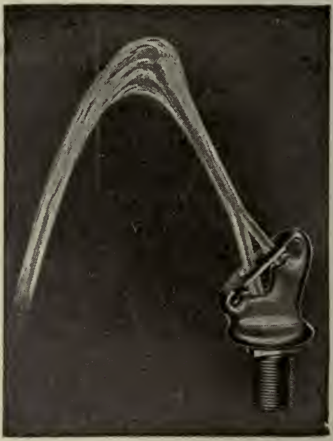
Escanaba, Mich.—The Chamber of Commerce is engaged in a campaign to secure for Escanaba a fairer proportion of the benefits from the heavy tax assessment levied against this city on account of the great value of the local railroad property, which is approximately equal to the total assessed valuation of the entire city. The Chamber has made a thorough investigation of the matter, and can show that the state of Michigan profits yearly at the expense of Escanaba to the extent of over $9 per capita.

The Chamber takes the position that a large portion of the income derived from the tax on railroad property in Escanaba should go to help share the burden imposed upon the city in providing education, police and fire protection, and public service facilities for the employees of its major industry. The campaign, if successful, will mean an increase in the annual income of the city amounting to several times the cost of the Chamber of Commerce. To date, splendid progress has been made, both locally and with state officials. The latter part of May a big Forum meeting was held, at which Governor Groesbeck and Hon. George B. Lord, chairman of the Michigan Commission of Inquiry into Taxation, spoke. The matter will come before the next session of the Legislature for action, at which time Escanaba hopes to obtain relief.

ORREN I. BANDEEN,
Secretary, Escanaba Chamber of Commerce.

The Halsey-Taylor Stream is Automatically Controlled

Never too High—
Never too Low



Note how the two streams converge as they rise. In converging these streams set up a mechanical interference in the stream that retards the movement of the water at the apex of the arc, building a convenient, confortable drinking mound.

Below is just one Halsey Taylor type in general use throughout the country in municipalities, factories and schools.

The fool-proof automatic stream control of Halsey Taylor drinking fountains is regarded everywhere as an achievement—a BIG step forward—a dependable automatic control.

The Halsey Taylor fountain was first to develop the perfect drinking stream —and this advance also has not yet been met in other fountains.

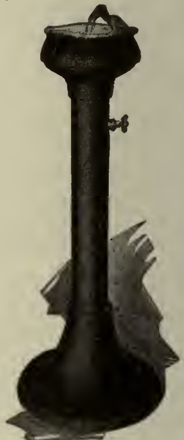
With these two dominant features, a perfect drinking stream and automatic stream control, the disagreeable things heretofore found in drinking fountains are entirely eliminated.

Illustrating No. 562 fountain head with guard. Note the symmetrical lines of this fountain head. Just a small detal but it indicates the fact that nothing is overlooked in Halsey Taylor fountains that might add to their desirability.

You'll find no water pools around Halsey Taylor fountains equipped with the automatic control; and you'll find folks drinking in comfort where the Halsey Taylor 2-stream side jet projector of is in use.

Halsey Taylor fountains are being installed everywhere in numbers, replacing old style fountains.

Get the full facts before buying fountains. Write us for the details.



No. 520-68

Puritan CANTONMENT DRINKING FOUNTAINS

The Halsey W. Taylor Co.
542 No. Park Ave.
Warren, Ohio

The City's Legal Rights and Duties

Information for City Attorneys and Other Municipal Officers, Summarizing Important Court Decisions and Legislation

Conducted by A. L. H. Street, Attorney at Law

City Held Not Liable for Loss of Private Property Through Insufficient Supply of Water for Fire Protection

In a case lately before the North Carolina Supreme Court (Mack v. Charlotte City Waterworks et al., 107 Southeastern Reporter, 244) plaintiff sued to recover damages for destruction of a building by fire, attributed by him to neglect of defendants to furnish a timely and adequate water-supply to enable the fire department to extinguish the fire. The Court holds that there is no liability, because defendants were engaged in the performance of a governmental function.

The city of Charlotte is under a commission form of government, and its municipal water-works system is under a board of water commissioners constituting a part of the city government.

Referring to statutes under which action of the commissioners is made municipal action, etc., the Supreme Court observes:

"This being true, our decisions hold and the present statute is in full affirmance of the principle . . . that a municipality may not be held liable at the suit of individuals for injuries caused by its officials when in the exercise of governmental functions and matters affecting only the public interests, unless such liability is expressly recognized and provided for by statute.

"In a recent case on this subject, this limitation on the right to sue for such an injury is stated as follows:

"'The principle upon which a municipality engaged in supplying water to the individual citizen, under contract for profit or pay, must be considered and dealt with as a private owner, applies to the ordinary burdens and liabilities incident to their private business relations, and not to its work for the public generally, such as procuring its water-supply and extending it, providing for fire protection and sanitation purposes, and the like, for therein the municipality is to be regarded as a governmental agency, and, as such, possessing and capable of exercising the powers and privileges conferred upon it by law.' Felmet v. Canton, 177 N. C. 52, 97 S. E. 728. . . .

"And if there should be any doubt that this is now the approved position with us, the matter would seem to be put at rest by section 2807, Consolidated Statutes, which provides in part as follows:

"'The city may . . . maintain its own light and water-works system to furnish water for fire and other purposes, and light to the city and its citizens, but shall in no case be liable for damages for a failure to furnish a sufficient supply of either water or light,' etc.

"Such a statute has been held to be well within the legislative powers to the extent that it applies to 'official acts, governmental in character, or for the benefit of the public generally.'"

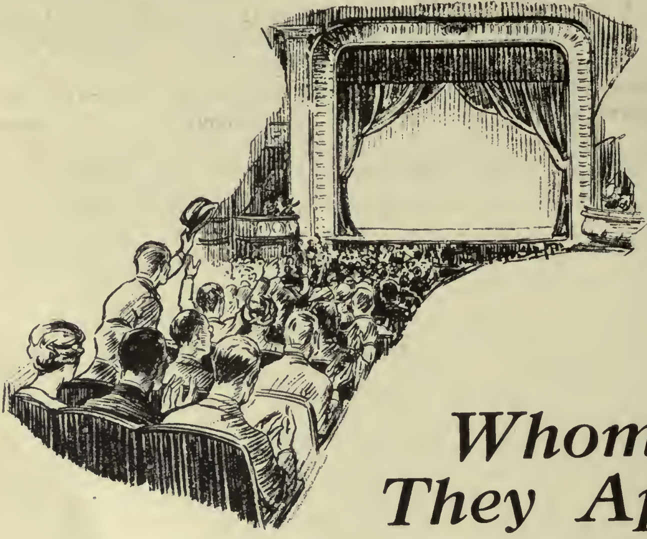
City Not Liable for Injury to Pedestrians Through Negligence in Street Cleaning Operations

That the law is still unsettled on the question as to just when a city is to be excused from responsibility for private injuries inflicted through negligence of municipal employees, on the ground that the accident occurred in the course of executing some governmental function, as distinguished from the execution of such non-governmental function as operating a public utility, is shown by the circumstance that the members of the United States Supreme Court were not able to concur in opinions as to whether street cleaning constitutes a governmental activity.

A portable tank used by the District of Columbia in sprinkling the streets of Washington preparatory to sweeping them was being filled at a water plug, when the employee in charge dropped the plug cover, thereby injuring plaintiff. Suit against the District for damages followed, and the Court of Appeals for the District certified the following question to the Supreme Court of the United States.

"Is the sprinkling of the streets to keep down dust for the purpose of the comfort and health of the general public a public or governmental act as contradistinguished from a private or municipal act, which exempts the District of Columbia from liability for the injuries caused by one of its employees engaged therein?"

Six of the members of the highest court



Whom Will They Applaud ?

IN numerous towns and cities certain public officials are gaining the applause of the public by pointing out how streets can be better lighted—and consequently how business can be improved, real estate values increased, accidents and crimes reduced—all without any additional expense whatsoever.

Who will gain this applause in your town?

We should like to tell you more about street lighting—how developments have rendered obsolete many existing installations and what can be done to improve the present street lighting in your own town. Without obligation let us send you our booklet, "Scientific Street Lighting," a guide to good practice, just off the press, and have one of our engineers call on you. Our engineering department is generally recognized as the headquarters of scientific efficient illumination.

Holophane street lighting installations (and also Holophane installations in schools, public buildings, offices, stores and homes) are giving notable results.

Will you be the man to gain the public's well deserved applause? Mail the coupon.

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In Canada address: Holophane Co., Ltd., 186 King St. W., Toronto.

Without obligation to me, please send me your booklet "Scientific School Lighting," and have one of your engineers call.

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A.C. 8-'22

of the land concurred in the judgment in favor of the District, holding that the defendant was immune from responsibility in the case on the ground of being engaged in the exercise of purely governmental functions at the time of the accident. Messrs. Justices Holmes, Brandeis and Clarke dissented. The gist of the majority opinion appears in the following quoted excerpt from it:

> "It is established doctrine that when acting in good faith municipal corporations are not liable for the manner in which they exercise discretionary powers of a public or legislative character. A different rule generally prevails as to their private or corporate powers. . . .
>
> "Application of these general principles to the facts of particular cases has occasioned much difficulty. The circumstances being stated, it is not always easy to determine what power a municipal corporation is exercising. But, nothing else appearing, we are of opinion that, when sweeping the streets, a municipality is exercising its discretionary powers to protect public health and comfort and is not performing a special corporate or municipal duty to keep them in repair. This conclusion, we think, accords with common observation, harmonizes with what has been declared heretofore concerning liability of the District of Columbia for torts, and is supported by well-considered cases." (Harris vs. District of Columbia, 47 Supreme Court Reporter, 610.)

Necessity for Conformity of Bids to Notice for Proposals

A notice inviting bids for the furnishing of a truck to be used in the fire department of a city specified a two-wheel, front-drive, aerial truck of no less than 100 horse-power. A bidder proposed to furnish a machine of an entirely different character as a substitute for that described in the notice to bidders, at a lower price than the bidders according to the specifications published. Held, that the city was not required to consider such proposal.

The "lowest bidder" within a statute requiring a municipality to award a contract to the lowest bidder must be a bidder who conforms to the requirements in the notice to bidders, and not one who proposes a substitute not conforming to the published specifications.

Where the common council of a city inviting bids for the furnishing of such a truck reserves the right to determine which of different trucks offered is best for the city, that reservation is limited to proposals for a truck of the required character, and the legality of the reservation cannot be questioned by a bidder whose proposal does not comply with the notice to bidders, for he has no right to compel his bid to be accepted, and has no interest in the determination of the question between other bidders whose proposals conform to the specifications. Whatever rights the latter may have does not concern it, for it was not a proper bidder. (New Jersey Supreme Court, International Motor Co. vs. City of Plainfield, 115 Atlantic Reporter, 391.)

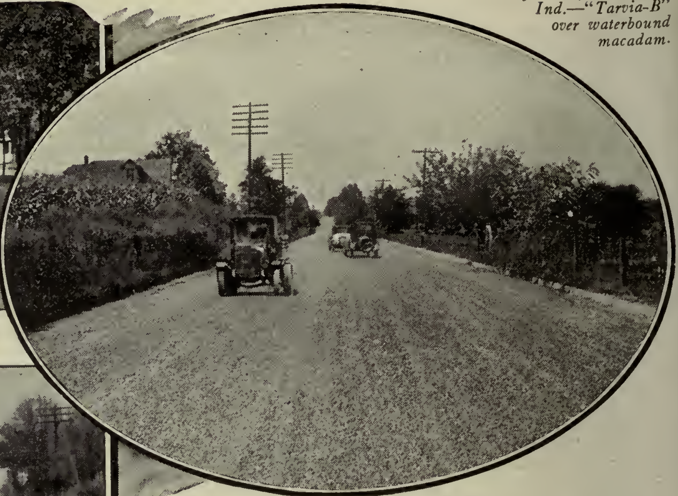
City Cannot Reimburse Its Employee for His Personal Liability for Negligence, Although Engaged at the Time in the Course of His Employment

A municipal water board has no right to reimburse an employee who was compelled to pay damages to persons injured through his negligence while not directly engaged in work for the board or in protecting its property or rights, holds the Minnesota Supreme Court in the case of State vs. Foote, 186 Northwestern Reporter, 230.

The superintendent of mechanical equipment of the St. Paul Water Board was driving between places where his services were required in the course of his employment. He used an automobile furnished by the Board and negligently collided with another automobile, injuring its occupants. The injured persons recovered judgment against him, and the Board sought to reimburse him. But the Court upheld the City Comptroller in his refusal to audit and approve the claim. The Court said:

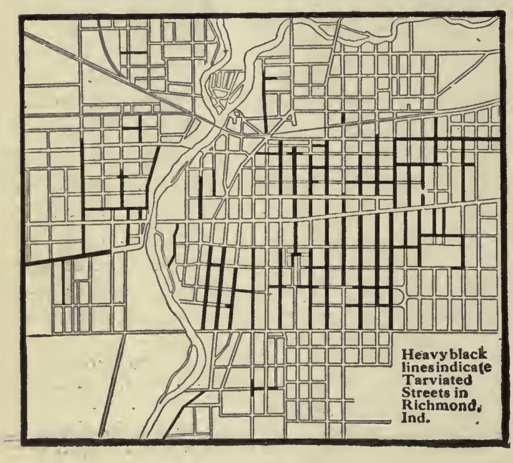
> "The funds within the control of the Board are not derived from direct taxation, but from water rents, except as the cost of laying water-mains is assessed as benefits against abutting property. But that notwithstanding, we must consider the moneys within the Board's control as public moneys in the sense that the same can only be used for legitimate ends in carrying on the business for which the Board is organized. The Board exists solely to furnish the city and its inhabitants with a public utility. It is not for private gain. In so far as water is furnished for fire protection, sprinkling, street cleaning, public baths, and public drinking fountains, the payment to the Board is made out of the city's funds. The City Council fixes the rates which the Board may collect. It is plain that the funds in the hands of the Board are, at least, trust funds in which the city and its inhabitants are interested, and therefore may be called public funds, misappropriation of which courts will prevent."

North 15th Street, Richmond, Ind.—Macadam maintained with "Tarvia-B"



Liberty Pike, Richmond, Ind.—"Tarvia-B" over waterbound macadam.

Chester Pike, Richmond, Ind.—Macadam maintained with "Tarvia-B"


Heavy black lines indicate Tarviated Streets in Richmond, Ind.

Here's what Richmond, Ind., thinks of Tarvia—

In 1918 Richmond stepped out of the mud and dust and inaugurated a program of mudless, dustless, all-year Tarvia roads. Describing Richmond's experience with Tarvia, Mr. D. B. Davis, City Civil Engineer, writes:

"It is with considerable pleasure that I report to you our success with Tarvia. This year makes the fourth successive one in which we have used your materials.

"We have developed here a Tarvia treated gravel-pavement which is so popular for residence streets that the demand each year is beyond our ability to construct. Observation of the service rendered by streets which have been surface treated during the past four years has convinced our people of the economy and serviceability of Tarvia for this purpose.

"In connection with our surface treating we repair all small depressions which occur in our 40 miles of gravel and macadam streets. A maintenance patrol is employed constantly on this work and, odd as it may seem, we have no ruts in any of our pavements."

There is a grade of Tarvia for every road purpose—new construction, repairs and maintenance.

Illustrated Booklets free upon request.

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THE BARRETT COMPANY, Limited: Montreal Toronto Winnipeg Vancouver St. John, N. B. Halifax, N. S.

Validity of Proceedings to Acquire Public Utilities—Notice of Election

An election to determine whether a town should "purchase, repair, and extend the electric lighting plant now existing in said town" was not invalid as calling for a vote on matters that should have been separated, holds the South Carolina Supreme Court in the case of Town of Summerville vs. Bank of Dorchester, 105 Southeastern Reporter, 32. The reasoning of the Court on this point, and its conclusions on other objections raised against the election, are indicated in the following extract:

"We have held that, where the purposes are entirely separate and distinct, as, for instance, the issuance of bonds for water-works and sewerage, the questions must be separately submitted. Herbert vs. Griffith, 99 S. C. 1, 82 S. E. 986. The reason is obvious. But in the same case we said that separate questions, germane to, or involved in, one main purpose, need not be separately submitted; for instance, whether bonds shall be issued to purchase, repair, and extend an existing system of water-works, because they are so closely related to and involved in the main purpose as to amount to but one question—that of supplying the people with water. So, here, purchase, repair, and extension were properly submitted as one question, because they are all involved in the main purpose of supplying the people with light.

"The submission did not specify the rate of interest to be paid on the bonds. That was not necessary. The voters knew that the bonds must bear interest at some rate to be specified thereon, and they knew that the Commissioners could agree to pay the highest rate allowed by statute, but no more, and also that they could, and presumably would, fix the lowest rate at which they could sell the bonds. It is impossible to submit every detail of such a transaction to popular vote. Some things must necessarily be left to the judgment and discretion of those whom the people have chosen to represent them.

"There is an ice-manufacturing plant in connection with the electric lighting plant, which is to be included in the purchase as a part of the latter. That is no objection to the validity of the bonds. The purchaser of the bonds is not bound to see that the commissioners apply the proceeds to the purposes intended, and no other. He may presume that the commissioners will proceed according to law in the performance of their duties."

On the Calendar of Conventions

August 8-16.—Chautauqua, N. Y.
Open Forum National Council. Annual assembly. Secretary, Robert S. Holmes, Daytona Beach, Fla.

August 15-18.—San Francisco, Calif.
International Association of Fire Engineers. Annual meeting. Secretary, James J. Mulcahey, City Hall, Yonkers, N. Y.

August 19-26.—Minneapolis, Minn.
American Institute of Park Executives. Annual convention. Secretary-Treasurer, Emmett P. Griffin, Superintendent of Parks, East St. Louis, Ill.

August 21-September 2.—Evanston, Ill.
National School for Commercial Secretaries. Address: Robert B. Beach, Business manager, Association of Commerce, Chicago, Ill.

August 22-25.—New Bedford, Mass.
International Association of Municipal Electricians. Annual convention. Secretary, Clarence R. George, City Electrician, Houston, Tex.

August 28-31.—Chatham, Ont.
Dominion Association of Fire Chiefs. Annual convention. Secretary, Chief James Armstrong, Kingston, Ont.

August 28-September 2.—Detroit, Mich.
National Safety Council. Annual Safety Congress. Secretary, W. H. Cameron, 168 North Michigan Avenue, Chicago, Ill.

August 29-31.—Williamsport, Pa.
League of Cities of the Third Class in Pennsylvania. Annual convention. Secretary, Fred H. Gates, City Clerk, Wilkes-Barre, Pa.

September 12-15.—New Bedford, Mass.
New England Water Works Association. Annual convention. Secretary, Frank J. Gifford, 715 Tremont Temple, Boston, Mass.

September 14-16.—Toronto, Ont.
American Association of Port Authorities. Annual convention. Secretary, M. P. Fennell, Jr., 57 Common Street, Montreal, Canada.

September 18-21.—Omaha, Nebr.
Association of American Cemetery Superintendents. Annual convention. Secretary, W. B. Jones, Highwood Cemetery, Pittsburgh, Pa.

September 18-22.—Minneapolis, Minn.
National Tax Association. Annual conference. Secretary, Alfred E. Holcomb, 195 Broadway, New York, N. Y.

September 18-23.—Palo Alto, Calif.
Western Summer School of Community Leadership. Address: Mrs. C. A. Simmons, Registrar, American City Bureau, Merchants' Exchange Building, San Francisco, Calif.

September 19-23.—Palo Alto, Calif.
League of California Municipalities. Annual convention. Executive secretary, W. J. Locke, Ninth floor, Pacific Building, San Francisco, Calif.

September 21-26.—Rome, Italy.
International Housing Congress. Address: C. B. Purdom, 3 Grays Inn Place, London, W. C., England.

September 25-28.—Hot Springs, Ark.
Southwest Waterworks Association. Annual convention. Secretary, E. L. Fulkerson, 617 Washington Street, Waco, Tex.

October 1-6.—Cleveland, Ohio.
American Society for Municipal Improvements. Annual convention. Secretary, Charles Carroll Brown, P. O. Box 234, St. Petersburg, Fla.

October 5-7.—Pullman, Wash.
Washington Association of Commercial Organization Secretaries. Annual meeting. Secretary, Vaughn H. Clearman, Wenatchee, Wash.

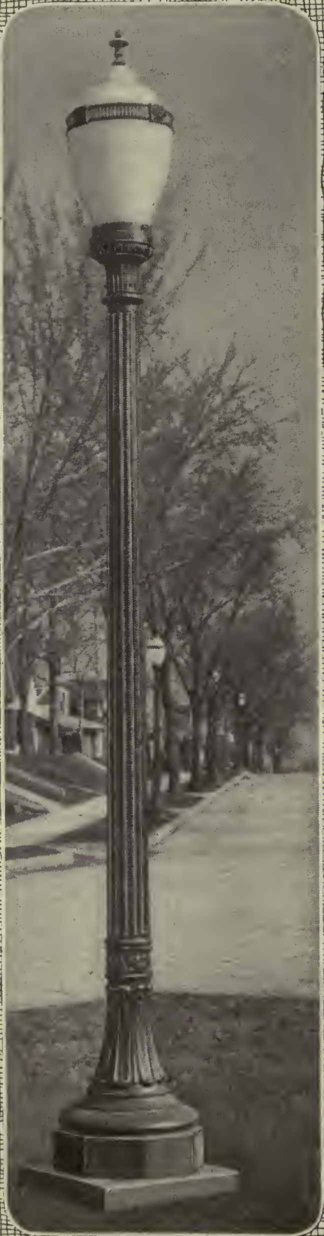
October 9.—Harrisburg, Pa.
Pennsylvania Commercial Secretaries Association. Annual meeting. Secretary-Treasurer, B. W. Grills, Secretary Chamber of Commerce, McKeesport, Pa.

October 9-12.—Atlantic City, N. J.
Playground and Recreation Association of America. Recreation Congress. Secretary, H. S. Braucher, 1 Madison Avenue, New York, N. Y.

October 16-19.—Cleveland, Ohio.
American Public Health Association. Annual meeting. Secretary, A. W. Hedrich, 370 Seventh Avenue, New York, N. Y.

October 17-19.—Pittsburg, Kans.
League of Kansas Municipalities. Annual convention. Secretary, John G. Stutz, University of Kansas, Lawrence, Kans.

October 23-25.—Detroit, Mich.
National Association of Commercial Organization Secretaries. Annual meeting. Secretary-Treasurer, John E. Northway, Chamber of Commerce, Hamilton, Ohio.



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has a new and very fine residential district which required a system of illumination in keeping with its environments. Naturally they selected King Cast Iron Standards, equipped with the General Electric Saratoga fixture.

A more substantial or attractive lighting standard is not to be found.

King Manufacturing Co.

St. Joseph, Missouri — Chicago, Ill.

KING WHITE WAY POSTS

Municipal and Civic Publications

Prices do not include postage unless so stated

THE CONTROL OF CITY SCHOOL FINANCES

George W. Frasier, Ph.D., Director of Classification and Statistics, Public Schools, Denver, Colo. The Bruce Publishing Company, Milwaukee, Wis. 1922. 132 pp. Illustrated. $1.25.

This book is devoted to the thesis that the schools should be independent of municipal meddling with budgets and school moneys. It points out the advantage to a community of having school finances controlled by school boards. The book takes up successively the general problem of financing, the relation of the board of education to municipal developments, the legal administration of financial control, the views of experts on the subject and finally summarizes the facts developed by the "Committee for Chamber of Commerce Cooperation with Public Schools" which was organized by the American City Bureau in 1921 and of which Dr. Strayer served as Chairman. Using these figures, the book seeks to demonstrate that school systems which are independent are far more efficient and render greater service than those in cities where there is municipal control and interference. A valuable hand book for members of boards of education and school statisticians.

THE RURAL MIND AND SOCIAL WELFARE

Ernest R. Groves, with Foreword by Kenyon L. Butterfield, President of Massachusetts Agricultural College. The University of Chicago Press, Chicago, Ill. 1922. XIV + 205 pp. $2.00.

This book attempts to analyze in detail the rural social mind for the purpose of emphasizing its significance in our national life. It maintains that rural people have a greater social function than merely to grow food for city dwellers. Among the subjects which it covers are the social contribution of primitive agriculture, the drift toward cities, country life and the various instincts, the country church and the rural mind, and the psychology of rural organizations. The increasing attention given to rural matters which makes this book especially timely is based on neither sentimental nor class interests. As our civilization tends to become more urban, we need to appreciate the social value of rural life.

SOCIETY AND ITS PROBLEMS

An Introduction to the Principles of Sociology. Grove Samuel Dow, Professor of Sociology in Baylor University. Thomas Y. Crowell Company, New York. 1922. XIV+594 pp. $2.75.

Although intended primarily for students of sociology, this book is not limited to them in its field. It is divided into six parts covering respectively the nature of sociology, problems pertaining to population, social institutions, an analysis of society, social maladjustment, and social progress. It points out that our handling of all these problems is growing better and, while many yet remain unsolved, we are steadily working toward a solution. The book is an exceedingly valuable survey of the whole problem which should be of real help to students and workers along philanthropic and social lines.

COMMUNITY CIVICS

Edgar W. Ames, M. A., Head of the Department of History and Civics, Troy High School, Troy, N. Y., and Arvie Eldred, M. A., Superintendent of Schools, Troy, N. Y. The Macmillan Company, New York. 1922 XIV+386 pp Illustrated. $1.32.

The teaching of the mechanics of government is not enough. The authors have undertaken to demonstrate their belief that the most important work of the teacher is the making of citizens, that children must learn how people live together in communities, must study the relationship of the individual to his fellowman and learn how governments have been instituted for his benefit. The book traces the evolution of the community from the beginning, the home, the family, and the community and takes up the big subjects of education, the protection of life and property, play, transportation, communication, the courts, social welfare, the government of large and small communities and the nation and their relation to the individual. Profuse illustrations well selected add to the value of this text-book, and questions which have been tried out in practise make the use of the book an easy task.

ORGANIZING THE COMMUNITY

A Review of Practical Principles. B. A. McClenahan, M. A. Assistant Director, Missouri School of Social Economy, St. Louis. Edited by George B. Mangold, Ph.D., Director Missouri School of Social Economy, St Louis.
The Century Company, New York. 1922. XVIII+260 pp. Charts. $1.75.

This book takes up the problem of organizing the community from the social worker's standpoint. It defines and describes the community, the social survey, survey methods and data, the organization of a small town, rural community organizations,, a county plan, and plans of the American Red Cross and other specialized agencies. It does not attempt to discuss organizations within a city as that constitutes a subject for a separate volume. For the social worker in whatever field, this book will prove of value in clarifying his thoughts.

HIGHWAY ENGINEERING AND TRANSPORT

Proceedings of a Regional Conference for the Study of Highway Engineering and Highway Transport. held at the Agricultural and Mechanical College of Texas in cooperation with the Highway and Highway Transport Education Committee, United States Bureau of Education, February 6 and 7, 1922. Edited by J. C. Nagle, Dean of Engineering. Published as Bulletin 25, Texas Engineering Experiment Station, College Station, Texas, May 1, 1922. 72 pp. Two of the addresses deal with the relation between good roads and good education. (Apply to the publishers.)

CITY ORDINANCES

"What Other City Councils Are Doing." Mimeographed list of references to ordinances introduced in or passed by city councils of cities other than Chicago from January 1 to May 31, 1922. Prepared by the Bureau of Statistics and Municipal Reference Library, 1005 City Hall, Chicago, Ill. (Apply to Fredrick Rex, Municipal Reference Librarian, at the address above.)

WATER-SUPPLY FOR CLARKSBURG, W. VA.

A pictorial review of the Department of Water Supply of Clarksburg by Scotland G. Highland, General Manager. Prepared for 1922-23. The views well illustrate the various features of Clarksburg's water plant, and show the cost of water waste through leaking faucets. The pamphlet also contains a list of nearly 100 foreign English newspapers, with brief comment on their general policy. (Apply to Mr. Highland.)

CITY PLANNING AND ZONING

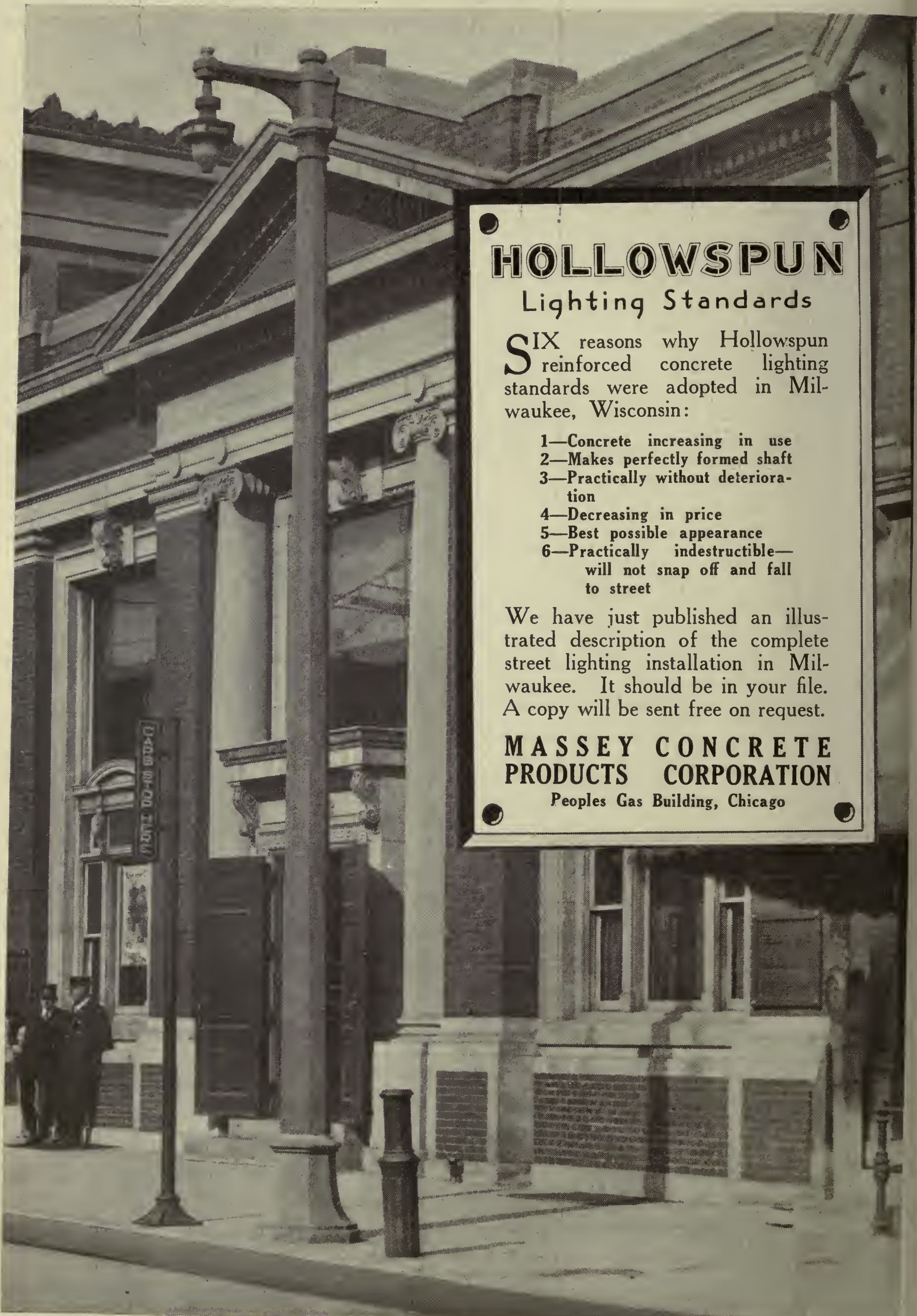
A comprehensive budget of pamphlets on city planning and zoning, sold at cost price, $1.50. Including: "Modern City Planning, by Thomas Adams; "The Law of the City Plan," revised 1922, by Frank B. Williams; "Zoning," revised 1922, by Edward M. Bassett; "Law of Zoning," by Herbert S. Swan; "Special Assessments" (means of financing municipal improvements), by Committee on Sources of Revenue, National Municipal League. (Apply to National Municipal League, 261 Broadway, New York, N. Y.)

GRADE CROSSING ELIMINATION IN PATERSON, N. J.

"Separation of Street and Railroad Grades, Paterson, N. J." A report of the City Plan Commission. By Herbert S. Swan and George W. Tuttle. 1922. 29 quarto pp Views and drawings. "The time has come when half-way measures to relieve conditions will no longer do—the problem must be approached in its broader and more comprehensive aspects as a city-wide problem instead of a local condition affecting a single street or street intersection." (Apply to City Plan Commission, Paterson, N. J.)

A ZONING PRIMER

Prepared by the Advisory Committee on Zoning appointed by Secretary Hoover. 8 pp. 1 illustration. The information is simply and clearly presented under the following heads: What Is Zoning? Why Do We Need Zoning?; Zoning Protects Property and Health; Zoning Reduces the Cost of Living; Zoning Is Legal; How to Get Started; A Zoning Program; What Cities and Towns Have Accomplished by Zoning; Where to Get Information. The Division of Building and Housing of the Department of Commerce, Washington, D. C., will furnish information concerning zoning progress in the United States. (The price of this pamphlet is 5 cents. Apply to the Government Printing Office, Washington, D. C.)



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Lighting Standards

SIX reasons why Hollowspun reinforced concrete lighting standards were adopted in Milwaukee, Wisconsin:

1—Concrete increasing in use
2—Makes perfectly formed shaft
3—Practically without deterioration
4—Decreasing in price
5—Best possible appearance
6—Practically indestructible—will not snap off and fall to street

We have just published an illustrated description of the complete street lighting installation in Milwaukee. It should be in your file. A copy will be sent free on request.

MASSEY CONCRETE PRODUCTS CORPORATION
Peoples Gas Building, Chicago

A CHARTER PRIMER

Prepared by the Taxpayers' League, of Duluth, Minn. No. 10, May 8, 1922, issue of The Taxpayers' Business. 16 pp. 4 charts of different types of municipal government. Arguments for and against each type. (Apply to the League.)

THE TEACHING OF CITIZENSHIP

An outline for Grades One to Nine inclusive, by Henry J. Peterson. Published by Houghton Mifflin Company, Boston. 90 pp. By emphasizing the keynote of cooperation of citizens through the idea of membership in certain groups, this handbook makes the pupils realize what our government means to them and what duties they owe the government. Price 28 cents. (Apply to publishers.)

PHILADELPHIA'S WATER-SUPPLY

An analysis of the need of the water service of Philadelphia with reference to the proposed substitute source of water-supply, and with a historical review of the water-works development. Prepared by the Bureau of Municipal Research of Philadelphia, May, 1922. 54 pp. Illustrated. (Apply to the Bureau.)

JUVENILE COURTS

Proceedings of the Conference on Juvenile-Court Standards, held under the auspices of the U. S. Children's Bureau and the National Probation Association, Milwaukee, Wis., June 21-22, 1921. Publication No. 97 of the Children's Bureau. 112 pp. Miss Julia Lathrop said, "Have we prevailing and accessible for the children and youth of our country who are brought into courts those provisions for their protection, guidance, or restraint which have failed them elsewhere?" (Apply to Government Printing Office, Washington, D. C.)

ZONING CHICAGO

A quarto, 12-page appeal to the citizens of Chicago to interest themselves in the work of the Chicago Zoning Commission so that a true "people's ordinance" may be drafted covering this matter. Views and colored maps. April, 1922. Presenting the facts that are essential to an understanding of the need for, and the principles of, this work. (Apply to Charles H. Wacker, Secretary of the Commission, 163 West Washington Street, Chicago, Ill.)

VICE REPRESSION IN NEW YORK CITY

Annual report of the Committee of Fourteen in New York City for 1921. 32 pp. 1922. The chairman of the Committee says, "Unfortunately vice does still exist. * * * But that New York is the cleanest of the world's largest cities is true and was true in 1918." (Apply to Frederick H. Whitin, secretary of the committee).

SCHOOL SALARIES

"Salaries of Administrative Officers and Their Assistants in School Systems of Cities of 25,000 Inhabitants or More," By Walter S. Deffenbaugh, specialist in city school systems, U. S. Bureau of Education. Bulletin, 1921, No. 30, of the Bureau of Education. 1922. 38 pp. Tables and lists, with analytical comment and suggestions for bettering conditions in the organization of school systems. (Apply to the Government Printing Office, Washington, D. C.)

ROADS IN ALGER COUNTY, MICH.

Report of Alger County Road Commission from date of inception, 1906, to January 1, 1922. 1922. 46 pp. Well illustrated. (Apply to Thos. N. Hannah, County Clerk, Munising, Mich.

Municipal Reports

Baltimore, Md.—Twenty-seventh Annual Report of the Free Public Bath Commission, to the Mayor and City Council for the fiscal year ended December 31, 1921. (Apply to Robt. F. G. Kelley, Secretary and Superintendent of the Commission).

Baltimore, Md.—The Ordinance of Estimates for the year 1922, with Detailed Statements of the Appropriations (Classified under Department Organization Units), for the Maintenance of the Government of the City. (Apply to Peter E. Tome, City Comptroller and Secretary to the Board of Estimates.)

Boston, Mass.—Annual Report of the Public Works Department for the year 1920. (Apply to Thomas F. Sullivan, Commissioner of Public Works, Boston, Mass.)

Cambridge, Mass.—Fifth Annual Report of the Planning Board to the City Council, for the year 1921. (Apply to the City Clerk.)

Charleston, S. C.—Fifth Annual Report of the Commissioners of Public Works for the Water Department. 1921. 77 pp. Well illustrated. (Apply to J. E. Gibson, Manager and Engineer, Water Department, 14 George Street, Charleston, S. C.

Chicago, Ill.—Twenty-fourth Annual Report, Department of Gas and Electricity. 1920. (Apply to William G. Keith, Commissioner of Gas and Electricity.)

Cincinnati, Ohio.—Annual Report of the Department of Street, Sewer and Catch-Basin Cleaning for the year 1921. (Apply to Fred Maag, Superintendent, Street Cleaning Department.)

Detroit, Mich.—Police Department report on crime reduction in 1921. Issued February, 1922. (Apply to Dr. James W. Inches, Commissioner).

Duluth, Minn.—Twenty-third Annual Report of the Water and Light Department for the year ending December 31, 1921. (Apply to P. G. Phillips, Commissioner of Public Utilities, Duluth, Minn.)

Erie, Pa.—Annual Report of the Superintendent of of the Department of Accounts and Finance. January 3, 1922. 38 pp. (Apply to Thos. Mehaffey, Superintendent of Accounts and Finance.)

Erie, Pa.—Budget, 1922. "Where the Tax Dollar Goes." 28 pp. (Apply to T. Hanlon, City Clerk.)

Gloversville, N. Y.—Eighth Annual Report of the Department of Health and Sanitation, for 1921. (Apply to William E. Walsh, Clerk of the Department.)

Greenwood, S. C.—Annual Reports of the Town Council and the Water and Electric Light Plant. Receipts and disbursements for the year 1921. (Apply to Robert J. Cartledge, Jr., Clerk, Greenwood, S. C.)

Holland, Mich.—Annual Report of the Board of Public Works for the Fiscal Year ending December 31, 1921. (Apply to Gerrit Appeldorn, Clerk of the Board.)

Indianapolis, Ind.—Report of the Board of Sanitary Commissioners of the Sanitary District for the year ending December 31, 1921. (Apply to Jay A. Craven, Secretary, Board of Sanitary Commissioners, Indianapolis, Ind.)

Johnstown, N. Y.—Forty-fourth Annual Report of the Board of Water Commissioners, filed January 21, 1922. (Apply to Grover E. Yerdon, City Clerk.)

Kansas City, Kans.—Annual Report of the Finance Commissioner for the year 1921. (Apply to A. H. Strickland, Commissioner of Finance and Revenue.)

Los Angeles, Cal.—Annual Message of George E. Cryer, Mayor, January 3, 1922. (Apply to the Mayor.)

McPherson, Kans.—Eighth Annual Report of the City, under commission government. (Apply to Ellen Lundstrom, City Clerk.)

Muskegon, Mich.—First Annual Report of the Efficiency Bureau. Published 1922. Mimeographed. Many blue-prints. (Apply to W. E. Hunter, Secretary of the Bureau.)

Muskegon, Mich.—Quarterly Report of the Administrative Department. Mimeographed. Many tables (Apply to I. R. Ellison, City Manager.)

New York, N. Y.—Report of the Chief Engineer of the Board of Estimate and Apportionment for the year 1920. (Apply to Arthur S. Tuttle, Chief Engineer.)

Rockford, Ill.—Twelfth Annual Report of the Board of Commissioners, Rockford Park District, for the year 1921. (Apply to Ruby I. Minard, Secretary of the Board.)

Saint John, N. B.—Report and Accounts of the Corporation for year ending December 31, 1921. (Apply to Adam P. Macintyre, Comptroller.)

Spokane, Wash.—Auditor's Annual Report for year ending December 31, 1921. (Apply to A. W. Burch, City Auditor.)

Springfield, Mass.—Forty-eighth Annual Report of the Board of Water Commissioners to the City Council, together with the reports of the Water Registrar, Superintendent and Chief Engineer to the Board for the year 1921. (Apply to Alfred R. Hathaway, Clerk of the Board.)

Springfield, Mass.—Fortieth Annual Report of the Health Department. Year ending December 31, 1921. (Apply to William L. Young, clerk, Health Department.)

Wallingford, Conn.—Report of the Electric Works for the year ending July 31, 1921. (Apply to A. L. Pierce, General Manager.)

TRINIDAD IN COLUMBUS, O. High Street, opposite the State Capitol Building, paved with TRINIDAD Lake Asphalt in 1915. Still in splendid condition.

You're the Judge

—and here's the evidence in Columbus

Thirteen streets in Columbus, O., have TRINIDAD Lake Asphalt pavements that average 30 years in age.

Today, in Columbus, there are 8 1/3 times more TRINIDAD Lake Asphalt pavements than all other asphalts combined.

Columbus has found—as hundreds of other municipalities—that the so-called "cheaper" asphalts are too expensive and troublesome to use.

TRINIDAD Lake Asphalt—a product of the Ages—makes a noiseless, resilient, attractive pavement that will last for years with little or no cost for maintenance.

Let us send you illustrated folders describing this remarkable material.

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Kansas City
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TRINIDAD LAKE ASPHALT

Methods, Materials and Appliances

News for City and County Engineers, City Managers, Water-Works Superintendents, City Controllers, Park Superintendents, Purchasing Agents, and Others Interested in the Economical Construction and Efficient Operation of Public Improvement Undertakings

Improving the Distribution of Light from Street Lamps

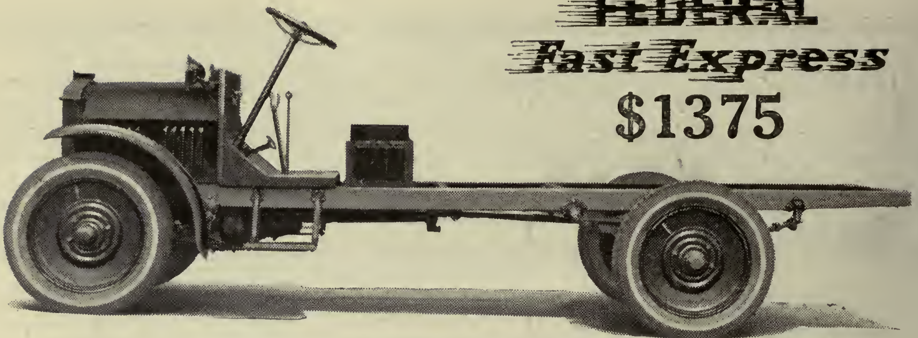
In a booklet entitled "Scientific Street Lighting," the engineers of the Holophane Glass Company, Inc., 342 Madison Avenue, New York City, describe in detail the theories which this company has worked up on street lighting. One section of the booklet is devoted to the subject of glare and economic waste in most of the present-day installations. Glare comprises two distinct effects—the ocular discomfort which one experiences in looking at an intensely bright light, and the blinding effect of the lamp. Shielding the bare lamp with a white glass globe or refractor overcomes the ocular discomfort, but does not decrease the blinding effect. So serious is this blinding effect that at a height of 13½ feet a 4,000-lumen lamp in a white glass globe produces a blinding effect equal to a waste of half the light; that is to say, if this blinding effect could be eliminated, a 2,000-lumen light would light the streets so that objects could be seen just as clearly as with a 4,000-lumen lamp under the conditions stated.

The booklet further states that one practical way to avoid serious waste due to blinding effect, commonly called glare, is to employ higher mounting heights; compared with a mounting height of 13½ feet, the glare is only one-half as bad at 18½ feet and only one-quarter as bad at 27 feet. To-day 15 feet is regarded as the minimum mounting height permissible under first-class practice. The Holophane Glass Company states that possible mounting heights of 25 to 35 feet are to be greatly preferred with regard to the quality of lighting.

There is a tendency toward higher illumination values on streets. In order to make the streets essentially safe and as convenient as by day, non-traffic streets should have an illumination of not less than one and one-third times full moonlight, arterial streets not less than four to seven times full moonlight, and promenade or main business district streets not less than sixteen times full moonlight. The last-named streets may well be lighted to a higher illumination, justified by the additional advertising value so obtained.

One of the first steps taken by the Holophane Glass Company for placing street lighting on a scientific basis was to determine the ideal light distribution curves which are necessary for uniform lighting on the street surface, for given ratios of spacing to the mounting height. This constituted a pioneer effort and resulted from an entirely different attitude towards the problem from that of merely installing any light source and judging the results with any established standard. In the investigation it was found that the spacing must be as close as 12 times the mounting height to make obtainable even a remote approximation to uniform lighting, and as close as 8 times the mounting height to produce a fully satisfactory approximation to uniform lighting. In attempting to approximate the ideal curves of light distribution, the Holophane Company solved the problem by the design of its special auxiliary known as Holophane refractors.

AN ATTRACTIVE LIGHTING STANDARD WITH HOLOPHANE REFRACTOR



FEDERAL
Fast Express
$1375

Another
FEDERAL

The Most Efficient Truck You Can Buy for Rapid, Certain Haulage

At all times and under all conditions, *fast* and *genuinely economical* this Federal FAST EXPRESS is the most efficient truck a municipality can own. At $1375, it offers an unequalled value in reliable transportation service. Built by Federal, its superior worth is assured not only by the reputation of its makers, but by the known high quality of the thoroughly-tested specialized units in every part of its construction.

These Specialized Units Insure Maximum Efficiency—

CAPACITY—2000 lbs.; body allowance, 900 lbs.; chassis weight, 2950 lbs.; total, 5850 lbs.; wheelbase, 132″; tread, 56″; loading space back of seat, 110 inches.

MOTOR—Continental J-4; 4-cylinders; L-head; Mono Block type; 3-bearing crank shaft; 3-point suspension; force feed lubrication system through hollow crank shaft; bore, 3¾″; stroke, 5″; 30 horsepower at normal engine speed.

IGNITION—Eisemann Magneto with manually controlled spark.

CARBURETOR — Zenith; central jet, float feed, automatic.

COOLING SYSTEM—By fan and water circulated by centrifugal water pump of ample proportions through a Federal type detachable core radiator with pressed steel tanks and side members chemically treated to prevent rust.

CLUTCH—Borg & Beck dry plate; two 10″ asbestos fabric discs encolsed in Bell housing; easily adjusted for wear.

TRANSMISSION — 3 speeds forward and one reverse; selective; sliding; stub tooth; spur gear type; mounted on flywheel housing; splined main shaft; annular ball and roller bearings of generous size throughout.

PROPELLER SHAFTS—Tubular, provided with three Universal Grease tight joints of ample proportions. Supported at center on self-aligning ball bearings.

REAR AXLE — Timken - Detroit; worm drive with differential mounted on Timken-Roller bearings; semi-floating; completely enclosed in one-piece pressed steel housing; gear ratio standard 5.6 to 1.

FRONT AXLE — Timken-Detroit; drop forged I-beam; tapered roller bearings.

BRAKES — Internal duplex; expanding type; 15″ x 2½″ foot and emergency, each having four Raybestos faced shoes operating in drums on rear wheels.

FRAME — Pressed steel; channel section; 3/16″ thick; 5″ deep at center; 30½″ wide at front and 34″ wide back of seat; height from ground loaded, 29½″.

SPRINGS — Chrome Vanadium steel; semi-elliptic type; front 38″ x 2¼″; rear, 50″ x 2½″; 8 leaves rear.

STEERING GEAR—Gemmer irreversible type; worm and worm wheel; ample adjustment for wear; bearings of generous size; 18″ hand wheel.

GASOLINE SYSTEM—Sheet steel tank; 12½ gals.; tinned inside and out; mounted on chassis under seat, with Stewart vacuum tank on dash under hood.

WHEELS—Dished and tapered demountable disc wheels; valve connection outside.

TIRES—Pneumatic U. S. Royal cords; truck type; non-skid; 33 x 5″ front and rear.

CONTROL — Transmission and brake levers mounted on transmission housing, center of chassis; steering gear column on left; accelerator pedal on toe board; hand throttle and spark control lever on steering column; ignition switch and carburetor choke are provided on the dash.

CHASSIS LUBRICATION — Alemite grease connections with efficient high pressure grease gun; no grease cups to be filled by hand.

DASH EQUIPMENT — Dash, toe boards, fenders and running boards heavy pressed steel, floor board wood.

ELECTRIC EQUIPMENT — Remy electric starter and generator; electric horn; electric side, tail and dash lights with special hard service battery mounted under seat, easily accessible.

CHASSIS PRICE—$1375 f. o. b. Detroit, freight and war tax additional. Price includes complete set of tools, jack, oil can and hand pump.

Phone your Federal dealer, or write or wire the factory for definite proof of the economies this truck will effect in your line of business. Your inquiry will have prompt and careful attention.

FEDERAL Motor Truck Company, Detroit, U. S. A.

SECTIONAL VIEW OF A STREET LIGHT REFRACTOR OF THE BOWL TYPE, SHOWING THE RELATION OF THE HORIZONTAL AND VERTICAL PRISMS

A Holophane refractor consists of two elements of clear glass, sealed one within the other. The inner element has horizontal prisms on its outer surface, and the outer element has vertical or horizontal prisms, depending upon the particular type on its inner surface. This means that both the inner and the outer surfaces of the refractor as a unit are of smooth glass and that the light distribution is accomplished by prismatic action rather than by surface reflection as in ordinary reflectors. The horizontal prisms of the inner element bend the light from the lamp so as to make it a maximum at any desired angle below the horizontal. The vertical prisms of the outer element of all types except the dome type spread out the light and make the unit luminous over its entire area. In the dome type the horizontal prisms of the inner element redirect the light only partially into the desired directions. The horizontal prisms of the outer element serve to complete the redirection of the light and secure the maximum candle-power at the desired angle. By this action all the light which the incandescent lamp or the gas mantle generates is effectively conserved and redirected in proper proportion in all desired directions.

The Holophane Glass Company stands ready to cooperate with any public official who would like to have an investigation made with a view to improving the street lighting system of his city. A letter sent to this company will bring a prompt response and the services of a trained engineer in helping to conduct the investigation without any charge to the city.

Shoecraft Joins Hoad, Decker and Drury

Announcement has been received that on August 1, Ezra B. Shoecraft, for the past nine years City Engineer of Flint, Mich., who resigned from that position recently, has become associated with Hoad, Decker and Drury, Ann Arbor, Mich., the new firm name to be Hoad, Decker, Shoecraft and Drury.

The addition of Mr. Shoecraft to the firm will enable it to extend its activities to the field of civil engineering to include city paving and other municipal engineering work. During Mr. Shoecraft's term of office as City Engineer of Flint, Mich., he was in charge of work totaling over $14,000,000.

O. J. Childs and Foamite Unite

Announcement has recently been made of the consolidation of the O. J. Childs Company, Utica, N. Y., and the Foamite Firefoam Company, with general offices at 151 Fifth Avenue, New York City. This union of interests is of distinct advantage in the fire protection field, particularly with the development of the Firefoam automatic sprinkler system which has recently been worked out by the Foamite Company in conjunction with the Grinnell Company, Providence, R. I. The new organization will be known as the Foamite-Childs Corporation, with W. J. Childs, President of the O. J. Childs Corporation, as President. Shortly after August 1 the executive offices will be located at Utica, N. Y.

Sewer Joint Compound

To insure satisfactory sewerage systems it is necessary to use some type of compound which will not crack under a slight settling of the sewer and thus permit the leakage of sewage or allow roots to work their way into the sewer. The Waring-Underwood Company, Fernwood, Delaware County, Pa., manufactures an asphaltic cementing compound prepared especially for making water-tight joints in vitrified sewer pipe. It is claimed that this 'Ideal" sewer joint compound has the added property of being adaptable for use in cases where the joints must be made when partly submerged.

In using this compound, the joint space of the sewer pipe is first calked with jute or oakum, leaving at least 1 inch open for the compound. The space, of course, will vary according to the size of the pipe and the requirements of the engineer's specifications. Where the pipe sections are of small size, they can be stood end up in pairs and the joint space readily filled after calking with jute or oakum. For large-size pipes the sections can be placed in a horizontal position on blocks and after calking the joint space to allowable depth, a "snake" or "joint runner" is placed in the same manner employed when pouring lead joints. This snake must be oiled to prevent the compound from sticking. The compound is poured at a temperature of about 400 degrees Fahrenheit, and for the best results this temperature must be maintained. Joints made in the trench are made with the use of a joint runner after the joints have been calked with jute or oakum. The presence of water almost to the top of the pipe will not destroy the effectiveness of the compound, provided it is poured at the proper temperature and care is taken to have the joint material run down one side and force its way under the bottom and up the other side.

It is said that the best results are obtained when the compound is melted and poured with-

4 Gunmen Captured—$2,800 Cash Recovered!

MEET Sergeant Frank Brennan and his Harley-Davidson Motorcycle—both members of the Elizabeth, N. J., Police Department. The Sergeant and his Harley-Davidson recently captured four notorious New York gunmen after a stiff fight in which two bandits were shot. $2,800 in cash was recovered.

All in a day's work for a Harley-Davidson. In over 900 cities and towns, these police motorcycles are hunting crime, chasing speeders, enforcing parking rules, answering emergency calls and performing a variety of daily service duties.

Cost? The Harley-Davidson's noted economy (50 miles for a dollar—gas, oil, tires, and all) and its long life make it an investment that pays big dividends to the city.

Write for special literature, the reduced prices and the improvements on 1923 models. Or ask your local dealer for free demonstration.

Harley-Davidson
Motor Co.
Milwaukee Wisconsin

Harley-Davidson

World's Champion Motorcycle

out excessive cooking. In order to guard against this cooking, it is advisable to use equipment which is not too large. For ordinary cases a small roofing kettle or lead melting furnace can be used to best advantage. A dipper or pouring ladle having a capacity just a little in excess of the material required for one joint is the best size to use. Several of these should be provided and kept warmed up before using. For large-size pipe, of course, a larger kettle will be required, but this should be of a type which is low and open at the top in order that the compound may be readily stirred. Otherwise, when a large quantity is melted, some of the filler will settle and cake on the bottom of the kettle. It is advisable to use up one batch of compound, if possible, before another is started. This will produce much more uniform results.

An interesting demonstration of the jointing qualities of "Ideal" sewer joint compound was shown in the case of a man who had to lay 510 feet of 6-inch pipe from a dam to a Pelton water-wheel which runs a ¾-horse-power generator, the head of the water from the surface of the dam to the turbine being about 44 feet. After the job was well started, the war affected the price of iron pipe so that it was decided to use terra cotta, under a maximum pressure of 20 pounds. Deep and wide socket pipe was used, but a test was first made, which burst the pipe at 55 pounds pressure. The joint held at 40 pounds pressure for one-half hour without showing any weakness, but the pipe showed sweating. The joints were made up as follows: The spigot and socket ends of the pipe were thoroughly dried. Then jute packing was rammed into the joint, using a calking iron. With the aid of an asbestos pouring runner the hot joint compound was poured. After the joint was cooled, a shoulder of 1 to 1 cement mortar was made, which completed the operation. Owing to a slight water-hammer when turning off the turbine, the joints at the lower end of the line blew out after a service of about two weeks, making it necessary to replace the terra cotta pipe with cast iron. The remaining terra cotta pipe at the upper end of the line, however, under a maximum pressure of 9 pounds, has been in service for over a year without showing any weakness at the joints.

Metal Columns for Municipal Buildings

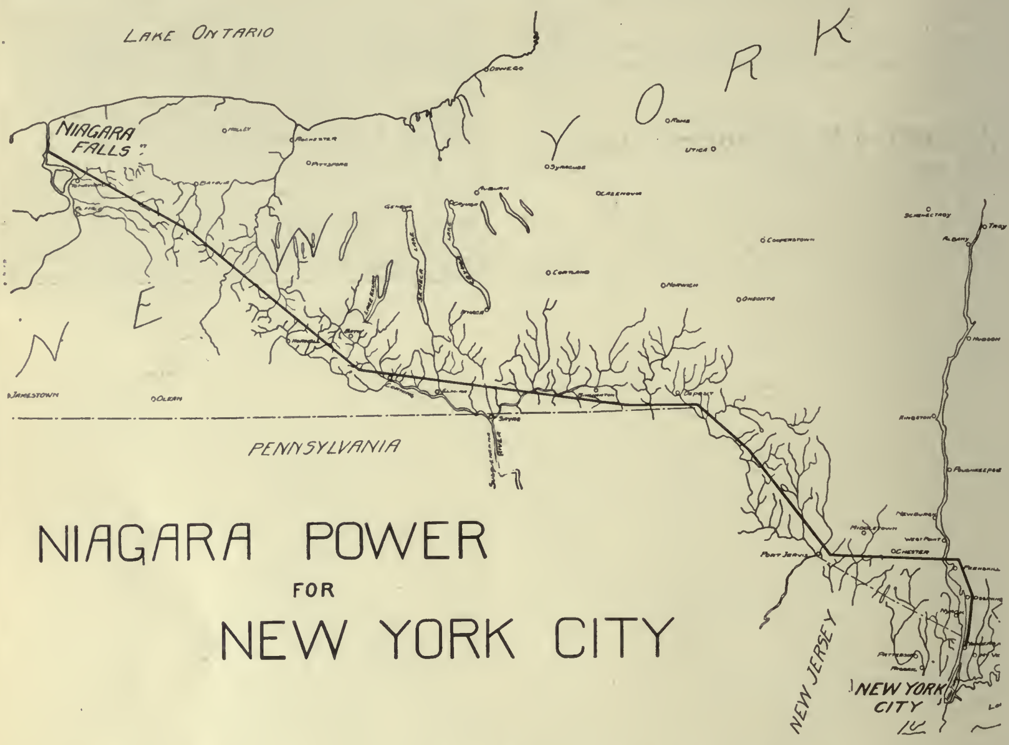
The Colonial motif in architecture is increasingly used for city halls and other municipal buildings, such as hospitals, court houses, etc., in a great many cities in the United States. When columns are used in construction of this type, it is practically impossible to buy wood columns that will not sooner or later show checking, rotting, or similar defects. This is, of course, the nature of wood, but nevertheless, it is frequently felt that the contractor or the architects are somewhat at fault.

The Union Metal Manufacturing Company, Canton, Ohio, makes metal columns of a particularly durable nature for just such work as this. The columns are architecturally correct, have entasis and stopped flutes and the other characteristics which mark the columns of the ancient classical orders. They are so constructed that they cannot split, check, rot, warp or open at the joint, and they cost but little more than wood. The shafts of the columns are made from 22-gage open-hearth galvanized steel rolled exclusively for the manufacture of Union Metal products. The steel is tight-coated with spelter, which adheres perfectly to the metal under all conditions and protects it from the action of the elements. Shafts up to and including a base diameter of 14 inches are made of one-ply No. 22-gage galvanized steel. All shafts over 14 inches in base diameter are made by two-ply No. 22-gage pressed and fluted together. The shafts are fluted and pressed into shape by patented machinery and dies designed for the purpose. The seams of the shafts are all securely locked and are always turned on the inside of the shafts. All but three of the designs are supplied with ornamental composition capitals. The weight does not fall upon the composition capital, but is impressed through a cylindrical steel core pin directly upon the steel shaft. Two of the designs are supplied with cast iron capitals, including a top square member, and one has a pressed steel capital made of 16-gage steel galvanized after the punch press operation, thus insuring a protecting coat for all surfaces.

THE FREESTONE COUNTY COURT HOUSE, FAIRFIELD, TEXAS, WITH ITS METAL COLUMNS

Before leaving the factory the steel shafts are painted with a coat of galvanized iron primer. The cast iron parts are coated with high-grade Metalastic paint. This completes the protection against the elements and furnishes a surface on which the finishing coats of paint can be applied with assurance that they will not crack or peel.

It is claimed that these are the strongest architectural columns manufactured. The principle of their construction, the fluted steel cylinder, is in accordance with the best engineering practice, and insures great compression strength many times stronger than that of wood columns. They are furnished to withstand all normal weight without reinforcement. Where an abnormally high pediment of weight is to be supported, however, they may be reinforced by steel I-beams or tubular steel poles passed up



THE SUPER-POWER PLAN STARTED

We have recently designed a 220,000 volt line for the American Super-Power Corporation to deliver 400,000 Horsepower from Niagara Falls to New York City.

We are now designing a 450,000 Horsepower Hydro-Electric Station at the Falls for the American Super-Power Corporation.

We design, build, operate and report on all Utility Plants, Electric, Street Railway, Water, Gas and Telephone.

TRADE MARK
F. W. BALLARD & CO.
ENGINEERS

F. W. BALLARD & COMPANY

Engineers **Cleveland, Ohio**

through them, or they may be very economically filled with concrete. This practice is usually resorted to in interior work, such as stores, colonnades, hotel lobbies, etc., where the columns are called upon to support the building and at the same time perform the function of architectural beauty.

Attractive Iron Fencings for School Grounds

It has long been recognized that fence is a real necessity to enclose school grounds, and that the use of iron fence is one of the best means of meeting the demand for protection and durability. At the same time, iron fence serves to give a certain sense of restraint to pupils, impelling them to stay within bounds while at school, and, if used at their own homes, naturally exerts an influence on them after school hours in making their yards, instead of the street, their playground.

The Leavelle McCampbell School, Graniteville, S. C., has recently installed the iron fence shown in the accompanying illustration. This fencing was supplied by the Stewart Iron Works Company, Cincinnati, Ohio, and comprises 1,128 feet of iron fence 60 inches high, constructed with ⅝-inch square pickets spaced 5 inches on centers and with 1½ by ½-inch patent 3-rib channel rail. Seven gates were required, three walk gates each 4 feet 4 inches wide, two drive gates 8 feet 4 inches wide, and two drive gates 12 feet 4 inches wide. The gates and fence were designed by Willis Ervin, architect, of Augusta, Ga., and erected by W. F. Bowe, Jr., contractor, Augusta. The gates and fence were given to the town of Graniteville by the Graniteville Manufacturing Company.

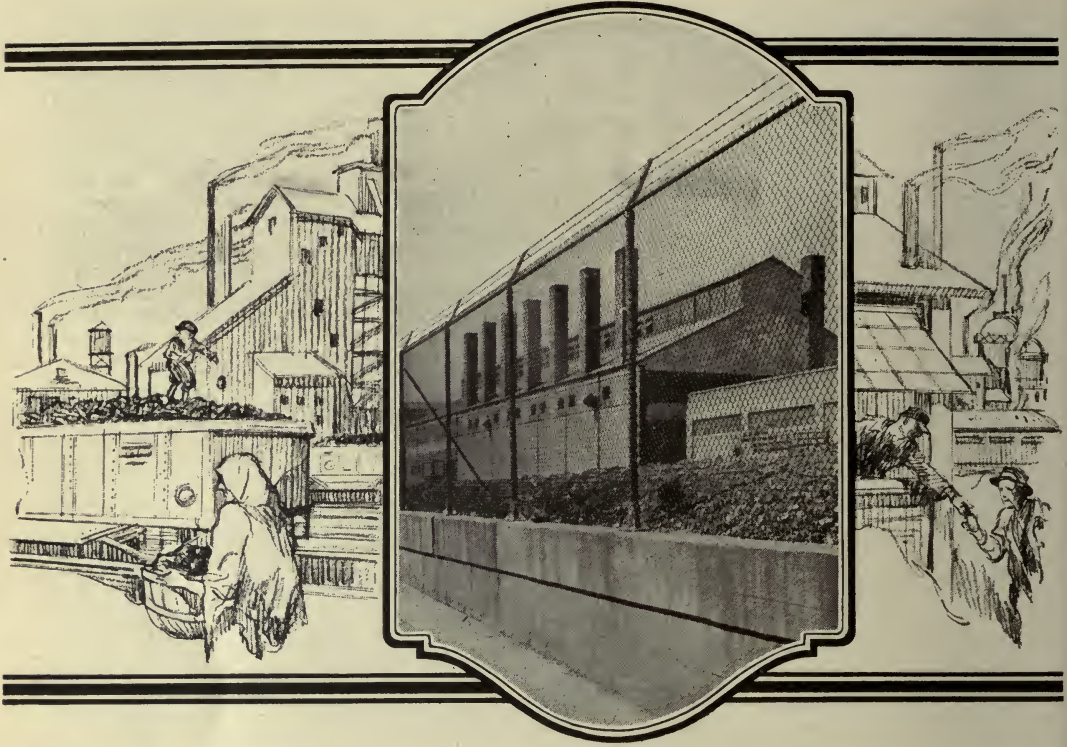
Where the grounds of a school such as this are not open, the old practice of leaving the school grounds from any and every point, is eliminated. Thus many of the dangers to which children are exposed as they dart across the street, unconsciously placing themselves in the path of automobiles, street cars and other vehicles, are eliminated; many lives are endangered every day by neglecting this safeguard. Iron fence is also used to good advantage for the division between the playground and the part set aside for flowers and shrubbery. Often the carefree boy, enthused over the game of ball, will step on the flower-beds and thereby destroy them.

A New Six-Cylinder Speed Truck

A new six-cylinder speed truck with one-yard dump body equipment is being furnished by the Avery Company, Peoria, Ill., to contractors and city and town officials. This truck, illustrated herewith, is sold with the all-weather cab and the all-service body, or it may be equipped with a school bus body and used in centralized school districts. Great satisfaction has been experienced by the Peetz, Colo., centralized schools, for which in District 9, one of these trucks equipped with a Knight-Tilden school bus body is used to make a trip of 24 miles twice a day, carrying 32 children. The trip is made in an hour and 30 minutes.

The dump-truck is a very handy proposition for speedy hauling within the city; where loads of about one ton are of frequent occurrence.

SCHOOLHOUSE ATTRACTIVELY SET OFF BY IRON FENCING



Put an end to petty thievery

Page Protection Fence surrounding municipal lighting plants, pumping stations, storage yards, and supply depots will eliminate costly thefts of coal, raw material and tools.

Its non-climbable chain-link construction forbids entrance to the petty thief, the vandal, and the trespasser.

Firmly constructed throughout, and with fabric heavily galvanized, Page Protection Fence withstands thieves, abuse and corrosion.

There is an expert fence-erecting organization in each of the cities listed below, that carries complete stocks of Page Fence Products and is equipped to give you prompt and efficient service in construction.

BINGHAMTON BIRMINGHAM BOSTON CHARLOTTE CINCINNATI DALLAS DETROIT KANSAS CITY LAFAYETTE LINCOLN MEMPHIS NEW HAVEN NEW ORLEANS NEW YORK OSCEOLA PHILADELPHIA RENSSELAER SPRINGFIELD, MASS. ST. LOUIS

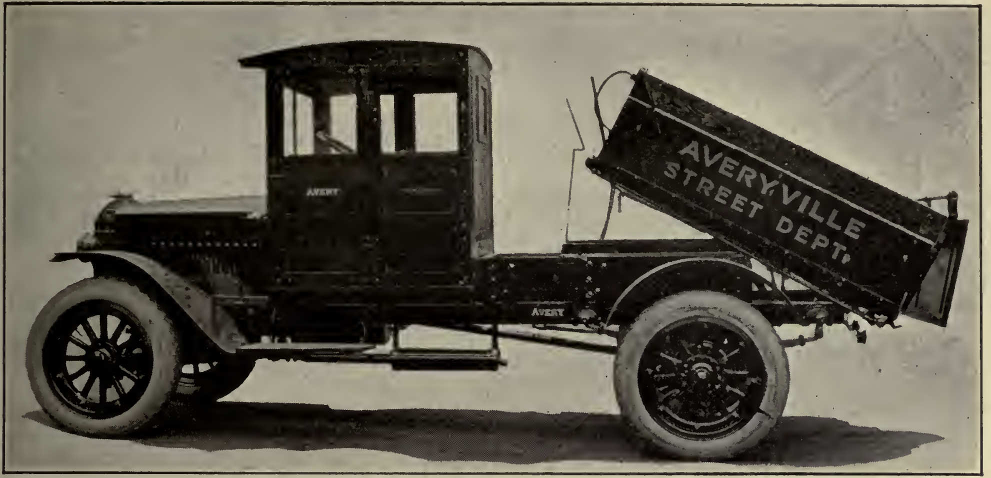
PAGE FENCE AND WIRE PRODUCTS ASSOCIATION, 215 North Michigan Avenue, Chicago

"America's first wire fence~1885"

PAGE
PROTECTION FENCE

Ingot Iron

The only wire fence made of Armco Ingot Iron



LIGHT TRUCK WITH ONE-TON DUMP BODY

The body can be dumped by the truck operator, reaching through the small window in the back of the cab. The dump body is flexible, being made of heavy-gage steel.

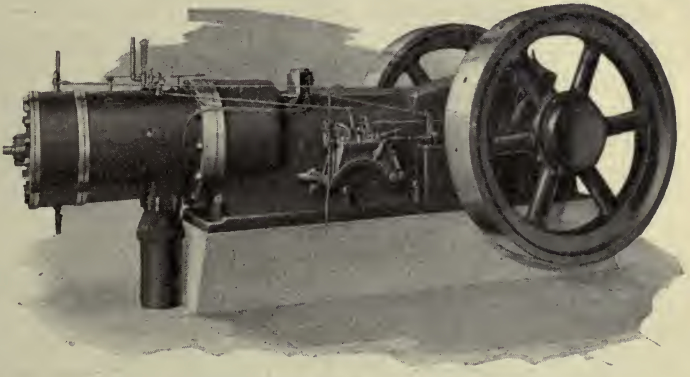
* * *

P. & H. President Returns

Henry Harnischfeger, president of the Pawling & Harnischfeger Co., Milwaukee, Wis., has returned from a 6-months' tour around the world, during which time he visited Japan, China, the Philippine Islands, India and several European countries. The special object of the trip was the investigation of business conditions and possibilities in the Far East.

Heavy-Duty Semi-Diesel Oil Engines for Power-Plant Service

The Power Manufacturing Company, Marion, Ohio, which claims to have the largest plant in America devoted exclusively to the making of oil engines of the semi-Diesel type, has issued the following interesting comparison of the cost of power produced by steam, electric motor or the "Primm" semi-Diesel engines which it manufactures:



A SEMI-DIESEL UNIT FOR MUNICIPAL PLANTS

COMPARISON OF POWER COSTS

Kind of Power	Cost Per Hour		Cost Per 24-Hour Day		Cost Per 300 Days of 24 Hours	
	1 H.P.	1 K.W.	1 H.P.	1 K.W.	1 H.P.	1 K.W.
Steam, using 5 lbs. of coal per h.p. per hour, at $4 per ton..........	1c.	1.34c.	24c.	32c.	$72.00	$96.48
Electric motor, 85% eff., using current at 3c. per kw................	2.63c.	3.52c.	63.3c.	84.8c.	189.90	234.46
Oil engine, using .6 lb. (.08) gal. fuel oil per b.h.p.-hour, at 4½c. per gal.	0.36c.	0.482c.	8.64c.	11.6c.	25.92	34.73

SAVING WITH A "PRIMM" OIL ENGINE, 100 B.H.P.

	Per Day 24 Hours	Per Month of 30 Days, 24 Hours	Per Year of 300 Days, 24 Hours
Replacing steam engine, 100 b.h.p., using 5 lbs. of coal at $4 per ton............................	$15.36	$460.80	$4,608.00
Replacing an electric motor, 100 b.h.p., 85% eff., using current at 3c. per kw...........................	54.66	1,639.80	16,398.00

For Municipal Service

LEE-4D

One Body for Garbage, Refuse and General Hauling

The new Lee 4-D refuse body which dumps without power is being used by a great many cities for hauling light rubbish, consisting of papers, boxes and trash of all kinds, garbage and refuse, crushed stone, excavated earth, barrels of tar, tools, supplies and other materials used by maintenance gangs in street work.

Bulletins 75-AC and 78 give specifications on all types. Secure these bulletins when you are making plans for the purchase of a new dumping body for any light-weight truck.

Bulletin 77-AC gives cost data of the operation of this equipment as used in Evanston, Ill.

LEE TRAILER & BODY COMPANY

2343 South La Salle Street **CHICAGO, ILL.**

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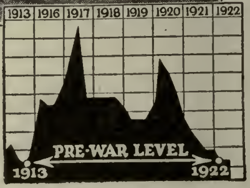

Cost of Iron Back to 1913

Free Blue Print.

Free blue-print showing Enterprise Fencing on your ground. Write for illustrated catalog and quotation today.

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FENCING

Buy Now for Less.

Protect and beautify Schools, Hospitals, Parks, Estates, Public Buildings, Cemeteries, Asylums. Lowest cost in years.

A SPOTLIGHT UNIT

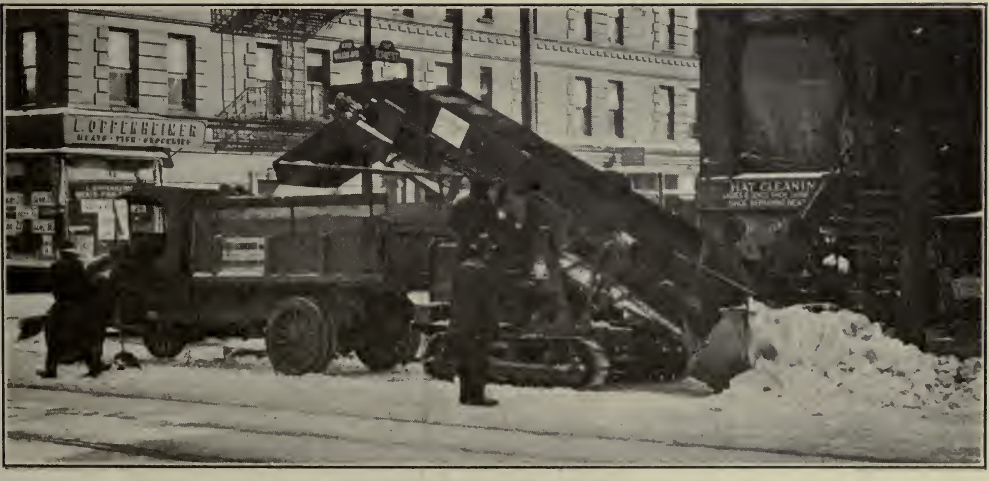
Illuminating the Traffic Cop

There is not much use in placing a traffic policeman with a stop-and-go signal at a poorly illuminated street crossing. There should be a well-illuminated section about him so that oncoming automobilists, for whom 99 per cent of the present traffic control is necessary, may see him. The National X-Ray Reflector Company, 235 West Jackson Boulevard, Chicago, Ill., has made a specialty of projectors for illuminating traffic police. Many cities are using traffic signals with concentrated lights, spotlighting the officer. This is claimed to have been originally developed for the city of Camden, N. J., by this company in cooperation with J. W. Kelly, Jr., Chief of the Electrical Bureau. The projector units are suspended 22 feet above the street on a guy wire or mounted on a street post by means of a gooseneck. Using a standard 200-watt lamp, there is a bright spot of light 6 feet in diameter, which makes the officer and his signal clearly visible at night for a distance of more than 1,500 feet.

This company has also made a specialty of heat-resisting colored lenses for mounting on traffic towers. These are used in Detroit and Baltimore with great success. The colors are standardized for traffic signals, red indicating "Stop," amber indicating a change of traffic, and green indicating "Go." These can be controlled automatically by a flasher or by a switch for each set of signals, depending on local conditions. The interval between the red and the green signals is usually two minutes. Twelve towers under construction in Detroit at present are to have the X-Ray reflectors mounted flush with the tower, similar to that used in Baltimore. The traffic signal lights are used day and night. Either 150- or 250-watt round-bulb lamps are used with the concentrating reflector, and the signal is clearly visible at a distance of a half-mile during the day. At night it can be seen for even a greater distance. Traffic control lighting requires a weather- and heat-proof color lens and a concentrating reflector of high permanent efficiency to produce a good "punch" of light that will be visible at a considerable distance.

Speeding Up Snow Removal

Getting rid of the snow after a heavy snowstorm is a considerable burden in New York City, both financially and physically. A very large portion of this labor is the shoveling of the snow into trucks or wagons to be hauled to a river or dumped. Not only is the item of shoveling from the piles to the truck a great expense, but it is the part of the work that takes the most time. It is not possible to have more than ten men loading one truck under most favorable conditions, and it will usually take them 12 to 15 minutes to load a big truck with extra sideboards so that the truck holds about 8 cubic yards. Contractors taking snow removal work in New York City usually have enough trucks to operate under a 2-minute headway if the dump is not too far away from the work, providing they can load fast enough. With hand shoveling they find it necessary to load a number of trucks at a time, increasing



A LOADING MACHINE THAT CUTS SNOW-REMOVAL COSTS

WHY TIFFIN FLUSHERS

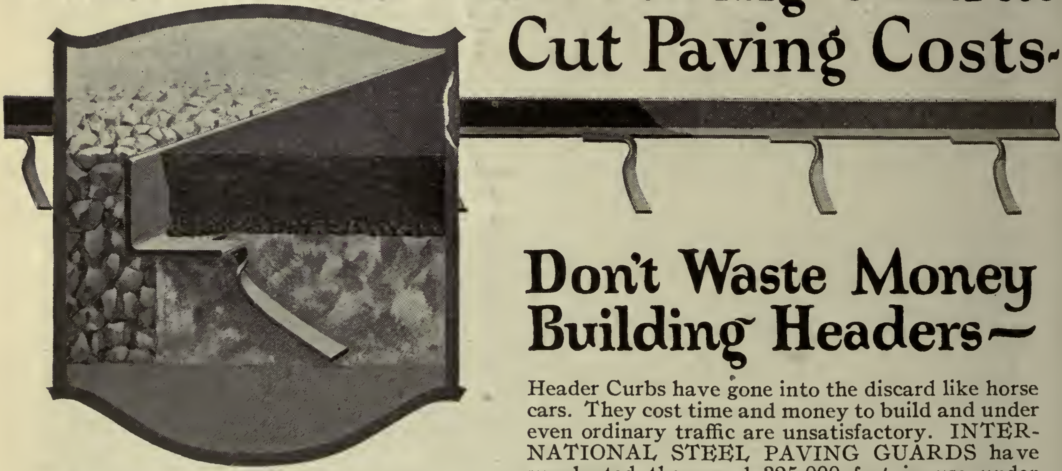
Superb Construction, Superior Design, Specialized Quality Units, Unity of Service

ECONOMY, EFFICIENCY, DURABILITY, SANITATION

Ask users about Tiffin Flushers and Tiffin Service. Write us for catalog and engineering detail.

THE TIFFIN WAGON COMPANY, TIFFIN, OHIO

International Steel Paving Guards Cut Paving Costs-



Don't Waste Money Building Headers—

Header Curbs have gone into the discard like horse cars. They cost time and money to build and under even ordinary traffic are unsatisfactory. INTERNATIONAL STEEL PAVING GUARDS have supplanted them and 325,000 feet in use under severest conditions of traffic prove their great superiority.

Built of standard structural angle with inch-wide anchors cut out of the horizontal leg every ten inches, twisted and bent like reinforcing bars and extending into the concrete, these guards protect the road edge. Built in various sizes for all types of surface and foundation.

Send for circular today

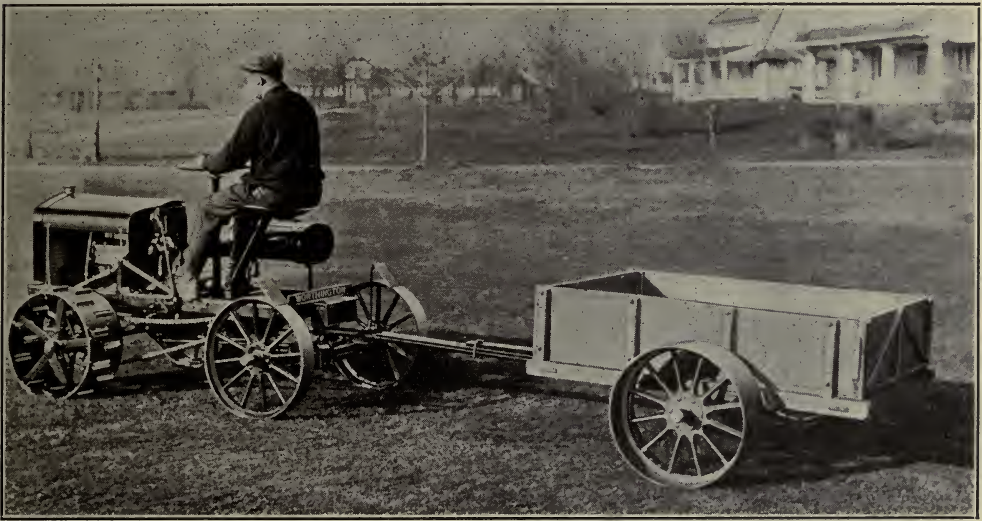
International Steel Tie Co., Cleveland, O.

the headway thereby and requiring several loading gangs. The cost of hand shoveling is estimated at about 13 to 20 cents per cubic yard.

A machine for doing this loading was in operation in the Mott Haven district of New York City, helping one contractor to dispose of one of the February snow-storms of 1922. This machine, developed by the George Haiss Manufacturing Company, Inc., 143d Street and Rider Avenue, New York City, consists of a 20-foot pan conveyor operating at an angle of 30 degrees from the horizontal, with the lower end at ground level at the snow pile. Attached to the tail shaft extending on either side are feeding propellers, pushing the snow into the pan conveyor and cleaning a path wider than the machine. The loader is driven by a 37-horsepower, 4-cylinder Waukesha truck engine and is mounted on creeper treads, preventing slipping and skidding. The elevator is pivoted at the center and is raised to a horizontal position when moved any distance. The loader is moved under its own power.

The machine was used for loading the high piles in important streets, and readily loaded 7.7-cubic-yard trucks in 2 minutes or less. This particular snowfall was a combination of rain, sleet and snow and was followed by a hard freeze. The snow piles were unusually difficult to handle, as they were frozen and had to be broken down by hand; otherwise the snow loader just slid them intact along the streets, although they averaged 10 to 15 cubic yards each. Had the fall consisted merely of snow, this additional labor of breaking down the piles would not have been necessary.

The contrast between machine loading and hand loading was very marked even so. With four men breaking down the piles and one machine operator, a speed of one truck every 2½ minutes was not at all unusual, including the time for getting the loaded truck away and placing the empty one. In other words, the machine with one operator and four loaders was equivalent to five or six 10-man shoveling crews. The advantage from the standpoint of superintendence is very evident. As to operating cost, assuming that half the time is used up in moving the machine, its average performance is 1½ cubic yards a minute, or 720 cubic yards in an 8-hour day. The cost is about $4.20 for gasoline (15 gallons at 28 cents), $6 for the operator, and four laborers at $4 a day each, making a total of $26.20, or about 3.64 cents per cubic yard. This represents a saving of 10 cents or more per cubic yard over hand labor, or $72 per machine day. With this money saving, which will be greater under ordinary snowfall conditions, and the time saving, it does not take very long for the machine to pay for itself.



A NEW HANDY TRAILER FOR PARK USE THAT WILL NOT MAR THE LAWN

Trailer Units for Park Hauling

Have you ever noticed how quickly an ordinary iron-tired wagon will cut up and destroy a park lawn? Many superintendents will take excellent care of their greensward, weeding it carefully and mowing it at the proper time, and then when it comes time to make some changes in flower-beds or in the grading, they will drive heavy wagons over the grass, badly cutting up the sod.

The Worthington Mower Company, Shawnee-on-Delaware, Pa., has brought out a light-weight two-wheeled trailer unit with broad steel wheels which is admirable for use in conjunction with its light-weight tractor unit for hauling sod, tools and the many other materials which are to be cared for in parks and on golf courses. This two-wheel tractor, illustrated herewith, is in use in a number of municipal and county parks and a very large number of country clubs and golf courses.

"ACME" (NESTABLE)
<TONCAN>
CORRUGATED METAL CULVERTS

In the development of suburban sites "ACME" (Nestable) Culverts offer an inexpensive and permanent means of drainage. Moreover, by the use of cement or stone work they can be made into very attractive forms, such as above.

This pleasing installation is in Shaker Heights Village, suburb of Cleveland. The two 6-foot "ACME" sections are faced at the end with rough ashler stone work. Installed 1911 — still in perfect condition. Have you catalog M-78?

THE CANTON CULVERT & SILO CO., Mfrs., CANTON, OHIO

Pennsylvania TRIO; a time and labor saver for golf course, parks, large estates and 86 in. swath.

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Quality
LAWN MOWERS

Whether used in gangs or singly each mower represents the utmost in mechanical perfection. Exclusive features such as self-sharpening, interchangeable parts, automobile type ball bearings assure ease and accuracy in operation.

Their long record of service is due to the use of finest materials in making. For instance, all blades, not just one, as in ordinary mowers, are made of crucible, tool steel; doubly tempered.

Write for "Pennsylvania TRIO Book"

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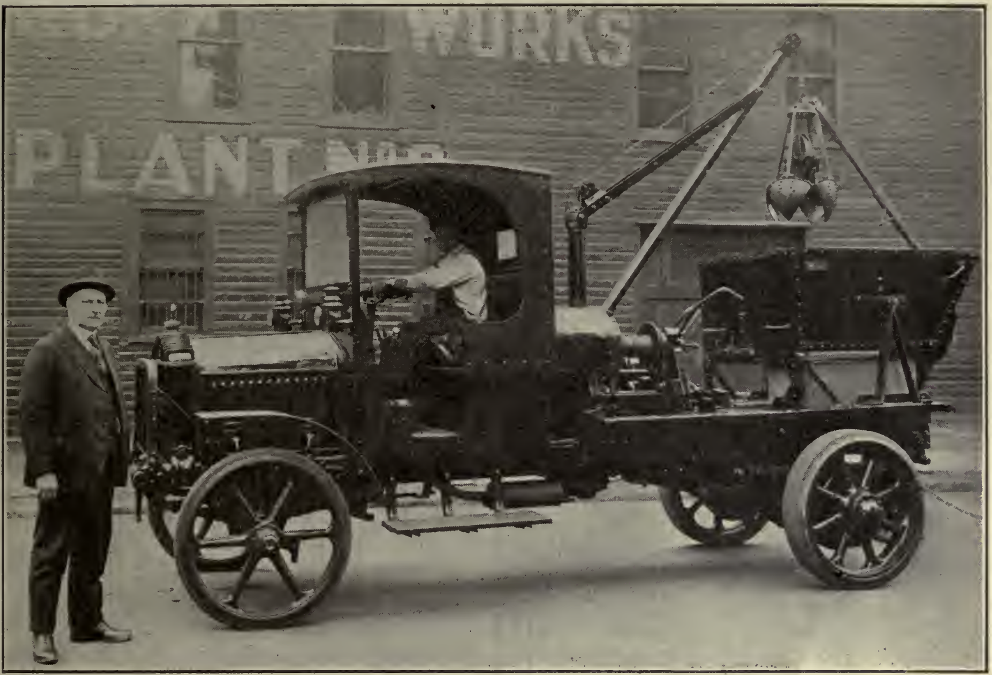


SEWER-CLEANING BUCKET MOUNTED ON TRUCK

A Rapid Catch-Basin Cleaner

A new device which is designed and constructed for rapidly cleaning catch-basins has been placed on the market by P. J. Healey, 25 Church Street, New York City. The machine consists of a truck upon which is mounted an especially designed dumping body which may be removed, allowing the truck to be used for other purposes. Upon the truck platform is a mast and boom, the mast resting upon ball bearings so that the boom may be swung directly over the catch-basin. A grab bucket, operated by power-driven drums using two cables, one for hoisting and lowering the bucket and the other for opening and closing it, is carried by the boom. A pole is used to direct the bucket, making it possible to clean the entire circumference of the catch-basin without sending a man below the surface.

The dump body on this device can be used as a container and may be dumped directly into another truck, so that while the second truck is taking its load to the dumping point or scow the container on the machine can be reloaded, ready to be discharged into the empty truck upon its return. The operation of the truck in conjunction with the cleaner prevents loss of time. The cleaning machine may be continually operated, proceeding from one catch-basin or sump to another, or to any place from which it is desirable to remove deposits, and without the loss of time which would be experienced were the machine itself sent to the dump.

The grab bucket, which is of the orange peel type, has a large capacity, making the operation of the machine very rapid. Various tests have demonstrated that catch-basins can be thoroughly cleaned in 20 to 30 minutes per basin and the usual litter and wet pavements are noticeably absent.

Protection Through Proper Fencing

One of the important factors in protecting an open reservoir, or valuable planted park grounds and playground areas where it is desired to have the children enter and leave by a definite entrance and exit, is a fence which is permanent, not too ornate, and strong enough to stand the attacks of the malicious.

Among the designs of wire fabric fencing made by the Page Steel and Wire Company, Adrian, Mich., is the Page Economy fabric. This was originally designed as an especially effective lawn and park fence, but it has found considerable favor, not only in industrial uses, but for protected places such as reservoirs, cemeteries, and playgrounds. This fence is well designed and of high quality, and for most municipal needs, except where the very strongest fence is necessary, is entirely suitable. It differs from the Page Wire-link fabric in that the latter was designed especially to fit industrial uses.

◆

ROUND AND HALF ROUND CULVERTS

Newport Culverts are made of GENUINE OPEN-HEARTH IRON, guaranteed to be 99.875 per cent pure iron copper alloy. They insure the maximum of endurance and satisfaction under city streets or county highways and will last indefinitely.

Newport Culverts are made in both round and half-round types. The half-round type is particularly adapted to city and small town use while the circular culvert is universally used for county highway work. The advantage of the half-round culvert is that it is just right for service where the head room is not sufficient for the installation of the full-circle type. It has the further advantage of easy cleaning in the event that an obstruction causes a stoppage, which is frequently the case in city or small-town use.

Send for booklets giving complete data on NEWPORT CULVERTS OF "GENUINE OPEN-HEARTH IRON."

NEWPORT CULVERT COMPANY

542 West Tenth Street, Newport, Kentucky

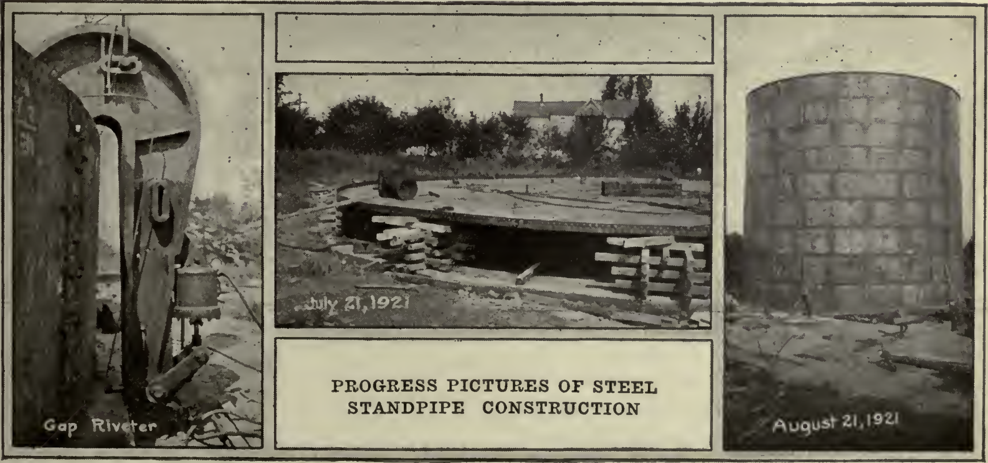
Volume XXVII Number 3
The American City Magazine
New York September 1922

The Stand-Pipe That Solved Gloversville's Water Storage Problem

By Ruth Canavan
Librarian, Metcalf and Eddy, Consulting Engineers, Boston, Mass.

TWO years ago the city of Gloversville, N. Y., found itself faced with the problem of improving its water service, and particularly of providing within city limits some method of storage by which higher pressures could be maintained during times of fire draft. In 1920 the population of Gloversville had reached 22,028. The water-supply was drawn by gravity from three creeks several miles distant from the city, the main source being Rice's Creek.

According to the 1916 Standard Regulations of the National Board of Fire Underwriters, a city of the size of Gloversville must be able to meet a maximum fire demand at a rate of nearly 7 million gallons per day for a period of 10 hours. This would necessitate, for fires alone, an available supply of 2.86 million gallons, in addition to provision for a water consumption which varies widely with the activity of the tanning industry. In July, 1920, when the tanneries were shut down, the average consumption was but 1.75 million gallons per day, as against 2.8 million gallons per day during the winter of 1920-21, when the industry was very active. With



BUILDING THE GLOVERSVILLE, N. Y., STANDPIPE
At left—Gap riveter working on lowest plates. Center—Standpipe bottom supported by blocking. Right—The completed standpipe

the tanneries in full operation, the maximum demand has been sufficient to reduce the pressure at the center of the city from about 90 to 65 pounds per square inch.

It was estimated that in order to equalize the variation in domestic and industrial water demand over the 24 hours, about 1 million gallons of storage would be required in excess of the 2.86 million gallons necessary for fire supply. Allowance also had to be made, in the case of an uncovered reservoir, for loss in capacity due to the formation of ice, and this was assumed at from 0.25 to 0.5 million gallons, resulting in a total storage requirement of at least 4 million gallons. In view of the fact that experience has shown it to be the part of wisdom to provide storage for at least a two days' supply, it was proposed to build a reservoir of from 5 to preferably 10 million gallons' capacity, but owing to the financial situation of the department and the urgent need of reinforcement of the distribution system, the authorities felt that expenditure for the construction of a reservoir of such size must be deferred and that the expedient of building a stand-pipe to contain a little over a million gallons was preferable.

While the provision of such a stand-pipe would have but little effect from the point of view of fire protection, it nevertheless would result in maintaining higher water pressure in the center of the city during those hours of the day when the demand from the tanneries was greatest; would limit the minimum pressure to 72 pounds, more or less, instead of the 65 pounds and less to which it had previously been reduced; and would give advantageously higher water pressures for fighting fires of short duration.

Location

It was decided to construct the stand-pipe on high land in the southerly part of the city, and at such elevation that its top would be 5 feet below the overflow level of the spillway of Rice's Creek Inlet. This choice of elevation was governed by the results of computations indicating that, whereas on week days the water-level in the stand-pipe would fluctuate between points 15 and 34 feet below the spillway*, on Sundays, with the tanneries shut down, and more especially on Sundays preceded or followed by a holiday, the water in the tank would approach the elevation of the spillway and might under some circumstances overflow, even with the top of the stand-pipe but 5 feet below the source of supply.

Provision against overflow was made by the installation of a 12-inch Ross pressure regulating valve in a gate-house near the base of the stand-pipe, by which the water-levels in the tank could be more closely controlled.

Design

Since the structure was to be in an exposed position and as temperatures of from 10 to 20 degrees below zero were to be expected at Gloversville on several successive days during the winter, one of the first considerations in the design of the stand-pipe was as to the necessity for roofing or housing it. To determine this, questionnaires were sent out to some 300 water-works in the northern part of the United States and in Canada. The results of the actual experience of these works indicated clearly that an open stand-pipe of large diameter, without overflow pipe**, would prove most satisfactory. The design provided for a steel tank 60 feet in diameter and 55 feet in height, with a capacity of 1,160,000 gallons.

The foundation prepared consisted of a concrete slab 12 inches thick, reinforced with ½-inch round deformed steel bars 12 inches on centers in two directions, surrounded and protected by a concrete foundation wall 3 feet wide and 7 feet high, built in excavation. Over the inlet pipe a small manhole was provided, to afford access to the joint between the pipe and the bottom plate of the tank. The contract for the construction of this foundation was awarded to a local bidder, Morrell Vrooman, Inc.

The tank was designed with nine courses of 12 plates each, of open-hearth "flange steel," varying in thickness from 1 inch for the bottom course to 5-16 of an inch for the top. The circumferential joints were "double-riveted lap-joints," and the vertical "butt joints with inside and out-

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*Some 13,900 feet distant from the stand-pipe, with which it is connected by an 18-inch cast iron pipe.

**It was believed that the overflow pipe if constructed on the inside would be torn out by ice action, and if on the outside, would soon become frozen and ineffectual.

INLET PIPING AT STANDPIPE GATEHOUSE SHOWING ARRANGEMENT OF VALVES

side straps." The contract for building and erecting the tank upon a foundation to be prepared by the Water Department was awarded to the Pittsburgh-Des Moines Steel Company.

Through the gate-house previously mentioned, passed three lines of inlet pipe, the first containing the 12-inch Ross regulating valve for admitting water into the tank and preventing overflow of the stand-pipe; the second, a 16-inch check valve (permitting water to leave the tank, but preventing its entrance) with a gate-valve on either side so that the check valve could be removed with the stand-pipe in service; the third, a by-pass with a gate-valve, for use in case of interruption of service in either of the other two lines.

To provide against the washing of any sediment which might accumulate in the bottom of the stand-pipe, into the outlet pipe, a silt top was installed. This was made of a piece of 16-inch wrought iron pipe with 6 brackets of 1½-inch by 1½-inch by ½-inch angles, each 4 inches long, riveted to the sides of the 16-inch pipe. It was so placed as practically to extend the inlet pipe 4 inches above the floor of the stand-pipe, and was sufficiently heavy to retain its position without being fastened in place.

The construction of the foundation took 42 days. The erection of the stand-pipe required 161 days, including some extra time allowed on account of unavoidable delay because of breakdown of the air compressing plant. The work on the stand-pipe, excluding grading, grassing, etc., was completed on September 16, 1921.

Cost

A summary of the cost of constructing the Gloversville stand-pipe, excluding engineering, administration, cost of land, and fencing, follows:

Steel stand-pipe (contract with Pittsburgh-Des Moines Steel Company)......	$24,940.
Concrete foundation, including gate-house substructure, 12-inch vitrified pipe, blow-off and grading......................	6,609.
Castings	776.
Gate-valves, etc.	1,306.
Connecting valve-chamber with main in street	180.
Miscellaneous	355.
Gate-house superstructure (of tapestry brick with raked joints)	850.
	$35,016.

The fencing, 8 feet high, with three strands of barbed wire on top and including two swinging gates, cost about $1.55 per linear foot erected, and was furnished and built by the Cyclone Fence Company.

Infant Mortality Rates in Cities

It is a striking fact that the group of cities of over 250,000 have constantly maintained, as a group, a lower infant mortality rate than the smaller population groups. Many smaller cities pass them individually, but the fact remains, it is in the larger cities that the greatest efforts are being made to combat infant mortality and its chief and preventable cause—ignorance. —Philip Van Ingen, M.D., in *The Survey*.

The Construction and Operation of the Sewage Disposal Works at Schenectady, New York

By John V. Lewis

Superintendent, Bureau of Sewage Disposal, Schenectady, N. Y.

THE city of Shenectady is situated in the eastern part of New York State and on the Mohawk River, about eighteen miles above the junction of this stream with the Hudson River. It is principally a manufacturing city, with its industrial life centered largely in the huge plants of the General Electric and American Locomotive Companies. These plants, as their names imply, manufacture electrical machinery, equipment and supplies, and steam locomotives. The city has a population of about 90,000 persons, scattered over an area of eight square miles, and is served by a separate system of sanitary sewers and storm-water drains.

The original drainage system was installed in 1885, some five years after complaint had been made to the State Board of Health that insanitary conditions were being caused by sewering into Cowhorn, College and Mill Creeks, which drain the more thickly populated districts of the city. With the construction of the original system and continuing for a period of some thirty years, the sewage flow was discharged without treatment into the waters of the Mohawk River. It should be mentioned, however, that up until 1890, Schenectady had a population of only 20,000 persons and a normal rate of growth. From 1890 to 1910 the population of the city increased very rapidly, and in the period from 1900 to 1905 the increase was at the phenomenal rate of 17 per cent per year. Extensive additions to the sewerage system were therefore required, and in 1906 the State Department of Health, in approving the plans for such additions, imposed the condition that within three years the city must acquire land and construct thereon a sewage disposal works to relieve the objectional conditions in the Mohawk River. An extension of time was subsequently granted and it was not until 1913 that definite action was taken which resulted in the construction of the existing disposal works.

The plans proposed and approved at that time contemplated the installation of a system of intercepting sewers, a sewage pumping station, and a treatment plant with a capacity of twelve million gallons per day. The sewers and pumping station were constructed as originally planned, but the plans for the treatment plant were altered from time to time as the construction work progressed, so that the existing plant differs materially from that originally intended. A comparison of the original and final plans is therefore of some interest.

The original layout comprised a bar screen and grit chamber; eighteen preliminary settling tanks of the Imhoff type with a working depth of about twenty-two feet; six acres of trickling filter-beds; six secondary settling-tanks constructed as the lower half of the filter-bed distribution pipe galleries; three sludge-drying tanks, or eighteen sludge-drying beds; a hypochlorite plant; several sludge-pumping and conveyor stations; and a laboratory and other necessary buildings.

The existing plant has a capacity of six million gallons per day and is composed of a bar screen chamber; nine settling tanks of the Imhoff type with a working depth of about fourteen feet; three acres of trickling filter-beds; thirteen sludge-drying beds; an emergency pumping-station of twenty-five million gallons daily capacity for pumping the filter effluent during flood stage in the river; and a laboratory and other necessary buildings.

The major changes from the original to final plans were the elimination of (1) the grit chamber, (2) the secondary settling tank, and (3) the hypochlorite plant, and the reduction in the working depth of the preliminary settling tanks. In addition, only one-half the number of tank and filter units originally contemplated were installed. The installation of a grit chamber would have required not only considerable expense for its construction but also for its subsequent care and operation. Considering the large dilution afforded during the time of flood flow in the river, the hypochlorite plant was deemed unnecessary. The elimination of the secondary settling-tanks and the reduction in the working depth of the Imhoff tanks were due to the fact that excavation to the required depth would have placed the foundations in a stratum of quicksand, thereby endangering the stability of the structures. Since funds were not available to build the entire plant, it was finally decided to construct one-half the number of tank and filter units originally designed. After the flood stage in the river in the spring of 1914 had passed, it was evident that an effluent pumping-station would be required to insure the proper operation of the plant at all times.

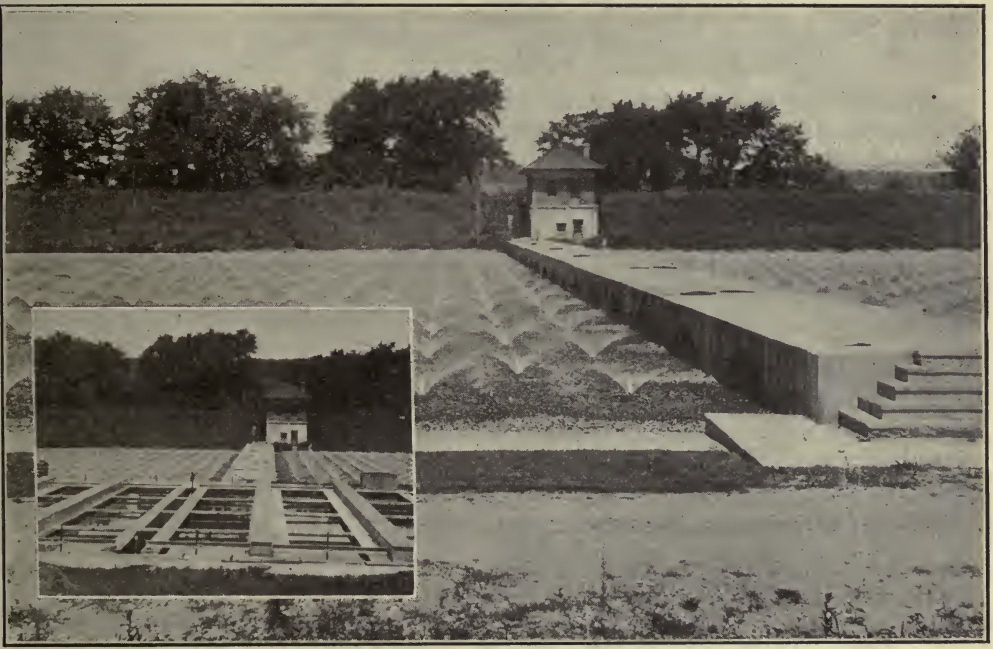
The Imhoff Tanks

The Imhoff tanks are of the horizontal type and rectangular in shape, each 94 feet 8 inches in length by 29 feet in width and have an over-all depth of 14 feet, 3 inches.

The upper half of each tank is divided into three longitudinal settling-chambers, approximately 8 feet wide and 7 feet 5 inches in depth to the slots which discharge the settling solids to the sludge digestion chambers. The floors of the settling-chambers have a slope of about 50 degrees with the horizontal, and the slots, which are continuous, vary from 3 to 4 inches in width.

The lower half of each tank has two longitudinal sludge digestion chambers, subdivided by transverse partition walls into sixteen sludge digestion hoppers. These transverse walls form hoppers, 11 feet in length by 11 feet in width, with the floor sloping in two directions, and support the vertical partition walls and sloping floors in the upper half of the tanks which separate the settling and sludge digestion chambers and the gas vents from each other. The gas vents are 11 feet in length by 2 feet in width, and have a freeboard of about 20 inches above the surface of the sewage in the settling-chambers.

Cast iron sludge pipes 8 inches in diameter extend vertically upward in the center of the digestion hoppers and terminate in the gas vents directly above. Cast iron tees are placed in each vertical pipe with



TWO VIEWS OF THE IMHOFF TANKS AND SPRINKLING FILTERS the center of their outlets about 3 feet below the surface of the sewage in the tanks. From these outlets horizontal branch pipes pass transversely through the settling chambers and outer walls of the tanks and are closed by sluice-gates in the open sludge channels which are provided between each two adjacent tanks. By opening the sluice gates, the sludge is discharged into the sludge channels by hydrostatic lift, and then flows through a cast iron sludge conduit to a sludge pumping station. At this point the sludge is pumped by means of a special centrifugal pump to the various sludge-drying beds.

The Trickling Filters

The trickling filter-beds are six in number and each has an area of approximately one-half acre. There are three concrete galleries, one between each two adjacent beds, extending the length of the filters. These galleries house the cast iron conduits for feeding the distribution system of the filters and the open return channels for collecting the effluent from the beds.

The filter material consists of broken trap rock, varying from 1 to 2 inches in size. The stone is placed over an underdrainage system, composed of standard 6-inch half tile, which are laid on a concrete floor 4 inches in thickness and grouted to insure alignment.

The distribution system contains 192 6-inch cast iron pipe lines, spaced 9 feet center to center and extending transversely from the filter galleries. These pipe lines are supported by the filter material and are placed just below the surface of the stone. Distribution of the sewage over the stone surface is effected by means of 1,272 circular spray nozzles, spaced 10 feet 5 inches center to center on each pipe line. The nozzles in each alternative pipe line are staggered so that each nozzle is set at the apex of an equilateral triangle. The head on the nozzles varies from a maximum of 4 feet to a minimum of 0 feet.

The Sludge Drying-Beds

There are five sludge drying-beds, each 140 feet in length by 19 feet in width, and eight drying beds, each 160 feet in length by 19 feet in width.

The beds are constructed of several layers of broken stone, varying from 1½ inches to ¼-inch in size, over which is placed a 6-inch layer of mortar sand. The underdrainage system is made up of standard vitrified tile pipe, laid with open joints.

The total area of the drying-beds is 37,850 square feet. Based on the population which it is estimated is tributary to the plant, the drying area amounts to 0.7 square feet per capita.

Operation

The sewage enters the Imhoff tanks, after passing through the bar screen. Distribution of the raw sewage to the several tanks is accomplished by means of cast iron conduits with outlets into each settling-chamber about 3 feet below the surface of the sewage. After passing through the tanks, which have a detention period of two hours, the clarified sewage flows over stationary outlet weirs to the open effluent channels. These channels lead to three dosing-tanks which contain 30-inch automatic dosing-siphons, there being one dosing-tank and siphon for each three Imhoff tanks. The dosing-tanks discharge the tank effluent to the filter-beds through the cast iron conduits and spray nozzles previously described, the dosing cycle ordinarily consisting of 1½-minute dosing period and a 2½-minute rest period. After passing through the filter-beds, the effluent is returned to the galleries through the underdrainage system and then diverted to the end of the middle gallery through a system of open channels and closed conduits. At this point, the final effluent enters an outfall conduit and under normal conditions is discharged to the river by gravity. In times of flood, the outfall sewer is closed by a sluice-gate and the effluent pumped around this gate through the emergency pumping-station.

The plant went into operation on January 12, 1915, and except for the period from May, 1920, to November, 1921, when repairs and improvements were being made, has been in continuous operation. The flow through the tanks is reversed once in every two weeks, and during the warm season, which usually lasts from April to October, sludge and scum are drawn from the tanks in small quantities and as often as the drying-beds are available for filling. The beds are usually filled to a depth of about 10 to 12 inches, and with favorable weather conditions, the sludge dries out rapidly in four to six days. At the expiration of this time, it is forked up from the beds and transported by means of dump-cars and industrial tracks within the beds, and dump-wagons, to a sludge dump. Inasmuch as there is no call for the sludge as fertilizer, it is used for filling in around the plant.

Overcoming Troubles in Operation

The troubles encountered in the operation of the plant have been due to (1) foaming of scum in the gas vents, (2) deposition of solids in the open influent channels which were in use previous to installation of cast iron conduits; and (3) lack of proper facilities for reversing the flow through the tanks, for removing scum from the vents, and for pumping sludge to the drying-beds.

In commenting on the phenomenon of foaming at this plant, it should be mentioned that the municipal water-supply is taken from dug wells and is comparatively hard and of low temperature. The sewage, as it comes to the plant, is relatively fresh and contains a substantial quantity of dissolved oxygen. During the night and early morning hours the sewage is very dilute because of the infiltration of ground water into the sewerage system.

The freshness and low temperature of the sewage in the early part of each year prolongs the period during which bacterial action is at a minimum, and consequently, during the warm months, this action has been very rapid in the large accumulation of undigested solids stored up in the digestion hoppers. The suspended matter rises to the surface and forms a heavy, thick mass in the gas vents. Under the worst conditions, this mass overflowed the low sides of the vents and spread out over the surface of the sewage in the settling-chambers.

Various means were employed to overcome the trouble, more particularly the use of hose streams to drive down the scum, but these provided only temporary relief. After observing the action over several seasons, it was decided that the use of water in the vents to drive down the scum only aggravated the trouble, and the method of frequent removal of both scum and sludge by way of the sludge pipes was substituted instead. Experience seems to prove that this latter method is the one best suited to the conditions existing here, in that foaming has been reduced to a minimum and the objectionable conditions which existed at the beginning of operation have been relieved.

The deposition of solids in the influent channels was entirely eliminated by the installation of cast iron pipe conduits with outlets into each settling chamber. The solids are not only transported direct to the tank proper, but also, the conduits in conjunction with a series of valves, facilitate the reversal of flow through the tanks. This operation now requires only fifteen minutes, although it formerly required one and one-half days and the diversion of the sewage flow from the tanks.

While the accumulation of scum in the gas vents can be removed fairly well through the existing sludge pipe risers and outlets and with the increased freeboard which has been provided by the addition of wooden boxes to the vents, still a larger, permanent freeboard and separate channels for scum removal would have greatly improved the original design and aided in the subsequent operation of the tanks.

Some difficulty has been experienced in the past in pumping the sludge drawn from the tanks, particularly before the installation of a bar screen in the outfall sewer leading to the plant. Large quantities of rags and waste, materials which do not readily disintegrate, are withdrawn in the sludge, and these soon clog the impeller of the centrifugal sludge pump, sometimes before a bed is completely filled. A wet sludge well with the pump suctions protected by a bar screen would no doubt remedy the trouble. It is expected that an installation of this kind will be provided in the near future unless the existing bar screen at the entrance to the tanks removes a greater quantity of the inert materials than is now evident.

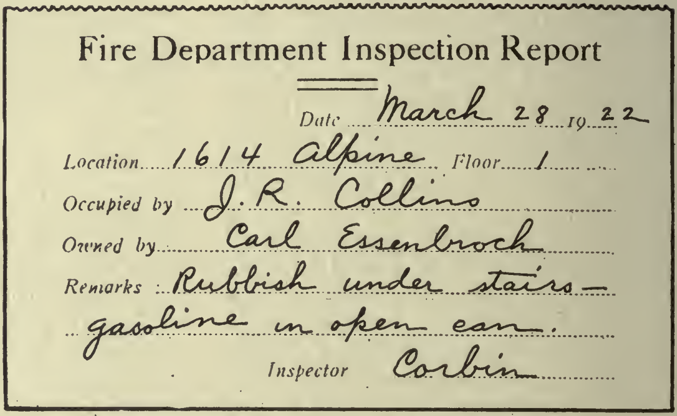
Water departments should be absolutely divorced from politics. Men who have proved their competence by actual service should not be subject to removal for any other cause than unfaithfulness to their duties. Certainly, municipal water departments should never be made the chess-boards of political leaders, the happy hunting-grounds of incompetent men who have been faithful to their party, or a repository for the representatives of potential votes.

The Fire Record System of Boise, Idaho

By W. A. Foster

Fire Chief, Boise City, Idaho

BOISE CITY has a population of 21,393 and an area of 3,040 acres. Wooden roofs are permitted outside of the fire limits. The fire department equipment consists of two steamers, four combination chemical and hose wagons, one chemical engine, nine chemical hand extinguishers, one aerial truck, 8,200 feet of rubber hose, and 62 Gamewell fire alarm boxes. The total value of this equipment is $50,875. The department, consisting of 32 members, is fully paid.



Fire Department Inspection Report

Date March 28 1922

Location 1614 alpine Floor 1

Occupied by J. R. Collins

Owned by Carl Essenbroch

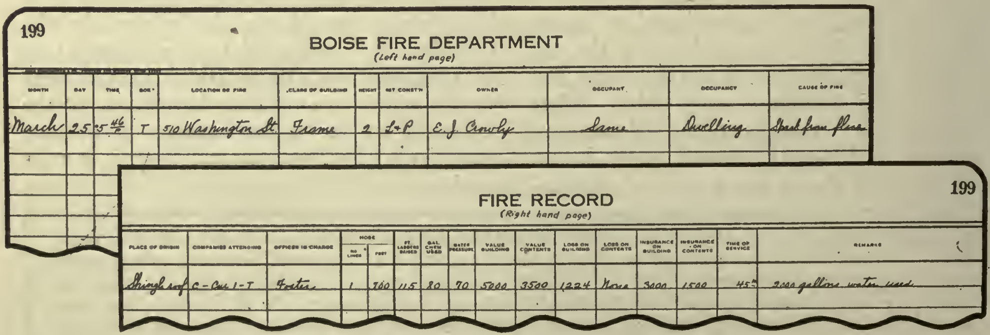
Remarks Rubbish under stairs— gasoline in open can.

Inspector Corbin

A REPORT LIKE THIS BRINGS ACTION

Appreciating the need of complete, consistent fire records to give all data covering every fire in the city, a system was devised some time ago in Boise which has met with the hearty approval of the Board of Underwriters and other fire officials.

All fire alarms are received at one central station and duly recorded. As soon as possible after arrival at a fire, the chief officers, who carry loose-leaf books for the purpose, make notations as called for. It is not possible to completely fill out this form at the fire, and such data as insurance on the building, contents, and insurance paid are recorded as soon as possible after the fire. The data from these sheets are then entered on the large record book kept at the central station. This book, reproduced herewith, constitutes the official record of all fires. The amount of insurance carried is ascertained from the owner or the occupant or from the agent writing the policy. Losses are determined after the adjuster has completed his work, or, if no insurance is carried, from the cost of repairing the damage done. The only record of losses and insurance kept by the fire depart-



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BOISE FIRE DEPARTMENT

(Left hand page)

MONTH	DAY	TIME	BOX	LOCATION OF FIRE	CLASS OF BUILDING	HEIGHT	RF CONST'N	OWNER	OCCUPANT	OCCUPANCY	CAUSE OF FIRE
March	25	5 46/P	T	510 Washington St.	Frame	2	L+P	E. J. Crowly	Same	Dwelling	Spark from flue

FIRE RECORD

(Right hand page)

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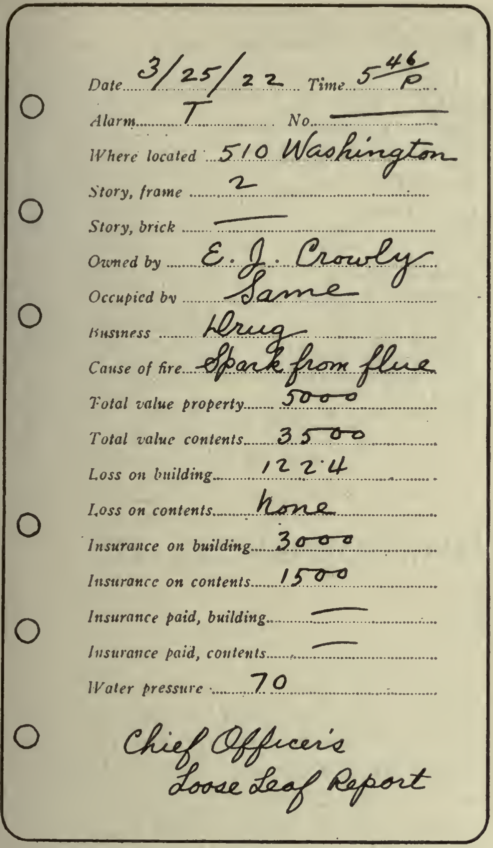
PLACE OF ORIGIN	COMPANIES ATTENDING	OFFICER IN CHARGE	HOSE		FT. LADDERS RAISED	GAL. CHEM USED	WATER PRESSURE	VALUE BUILDING	VALUE CONTENTS	LOSS ON BUILDING	LOSS ON CONTENTS	INSURANCE ON BUILDING	INSURANCE ON CONTENTS	TIME OF SERVICE	REMARKS
			NO. LINES	FEET											
Shingle roof	C - Co. 1 - T	Foster	1	700	115	80	70	5000	3500	1224	None	3000	1500	45	2000 gallons water used

PAGES FROM THE FIRE LEDGER USED IN BOISE



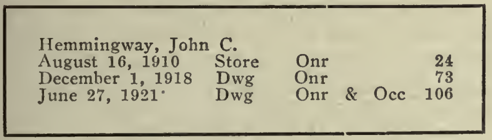
Date 3/25/22 Time 5^{46} P
Alarm T No. —
Where located 510 Washington
Story, frame 2
Story, brick —
Owned by E. J. Crowly
Occupied by Same
Business Drug
Cause of fire Spark from flue
Total value property 5000
Total value contents 3500
Loss on building 1224
Loss on contents None
Insurance on building 3000
Insurance on contents 1500
Insurance paid, building —
Insurance paid, contents —
Water pressure 70

Chief Officer's
Loose Leaf Report

ment is that inscribed in the large record book.

A card index record is also kept of all fires and filed alphabetically by owner and occupant. The information on this card is only enough to identify the particular fire.

CARD INDEX RECORD



Hemmingway, John C.

August 16, 1910	Store	Onr	24
December 1, 1918	Dwg	Onr	73
June 27, 1921	Dwg	Onr & Occ	106

The name recorded in the upper left-hand corner is identified as that of owner or occupant, or both, by the symbol in the third column. "Onr" indicates that Hemmingway was the owner but did not occupy the premises. If "Onr and Occ" appears, it indicates that he both owned and occupied the premises. The first column gives the date of the fire, the second column the type of building, and the fourth column the page in the record book on which complete data of the fire are entered.

Each company maintains its own journal; there is no attempt to post the reports from all units and companies in a single ledger. The data shown on the company's records cover the usual items of location, etc., the number of miles covered by the apparatus, the amount of gasoline and oil used, date of repairs, and such matters as when hose was changed, ladders cleaned, and general work done on the apparatus.

Records of violations of ordinances relating to fire hazards are made during the periodic inspections conducted by the uniformed force under the direction of the chief officer. Violations are noted on a small slip (Fire Department Inspection Report) and submitted at the end of each inspection. The chief checks the conditions as indicated and follows the necessary steps in having them corrected. The work is somewhat handicapped by the lack of comprehensive ordinances, but the results have in general been quite satisfactory. Through these reports contact is maintained with the building department and other officials interested in building construction.

Individual fire reports are entered in the fire records or ledger, the pages of which are 15 inches square. Two facing pages of this record are reproduced herewith. In the fourth column under "Box" the entry "T" indicates that the alarm recorded was sent in by telephone. In the columns "Height" and "Interior Construction," 2 and LP indicate that it was a two-story building of lath and plaster construction. In the second column on the right-hand page, under the heading "Companies Attending," the entry indicates that there were a chemical, a combination No. 1 and an aerial truck on duty at the fire. Water pressure is recorded in pounds per square inch. The data given in the other columns are self-explanatory.

Monthly totals of fires are kept and are used in the monthly and annual reports which are submitted to the Council. The reports include the number of fires, number of alarms and number of needless alarms, number of trips out of the city by the fire department, total losses, total valuation and total insurance carried. Copies of the report which is submitted to the Council are filed at the central station, and these reports are used also in compiling the annual reports for the National Board of Fire

Underwriters. If more than one company works at a fire, each company keeps its own separate report; no combined report is prepared. No special records are kept of theater violations, other than the records of fire department inspection reports. In case the fire department makes trips outside the city, the fact is recorded under "Remarks" in the fire record ledger and also under "Fire Location."

The Fire Chief has general supervision of the department, is its administrative head and is responsible for its discipline. First Assistant Warren Compton and Second Assistant Frank Pulaski are each in charge of one platoon and respond to all alarms. They are also in charge of the apparatus at the fire in the absence of the chief during their respective shifts.

June 1, 1921

To the Honorable Mayor and Council of Boise:

Gentlemen:

I herewith submit my regular monthly report of the activities of my department for the month of May, 1921:

Number of telephone alarms	14
Number of box alarms	5
Number of still alarms	0
Total number of alarms	19
False alarms	1
Duplicate alarms	2

Value of buildings involved	$223,500.
Value of contents	116,450.
Insurance on buildings	94,600.
Insurance on contents	56,850.
Loss on buildings	1,316.55
Loss on contents	420.20
Gallons of water used	64,500
Total time of fire service	3 hours 18 minutes
Total miles traveled	31
Average water pressure	71 lb. p.s.i.

Respectfully submitted,
W. A. Foster,
Chief of the Fire Department.

The Progressive Development of Roads

The road policy of the Department of Public Highways, Ontario, Canada, has been one of progressive development. Time is an essential consideration in the building of roads, if best results are to be obtained. Certain types of surface construction which have been successful in England have failed on this continent, the reason being that in England they have been laid on old and well-settled foundations, whereas on this continent an attempt has been made to obtain an earth grade, drainage, foundation and wearing surface as one work and in one season. Uneven settlement and failure have been the inevitable result. Railway engineers know that on many new earth grades appreciable settlement occurs for at least three years.

By "progressive development" in road building is meant a method by which an earth grade is built one season with merely sufficient gravel or stone surfacing to carry traffic. Work on the foundation is continued the following season, and by the third year the road-bed is ready for the final surface.

By reason of this policy, very considerable expenditures have been necessary on earthwork, bridges, culverts and foundations before the final stage has been reached, and much misunderstanding has resulted. Foundations laid by the Ontario Department of Public Highways have been locally assumed to be the finished road and, wearing to a rough condition, have been criticised. The Department has been fully aware of the principle that roads of the macadam and gravel types are not suitable under conditions of heavy traffic. Neither are they suitable for foundations until they have been subjected to one or two seasons' wear to "take out the settlement," such as occurs on these roads in spring and autumn. Macadam and gravel construction is excellent for foundation purposes. It may be used for traffic temporarily, and this temporary traffic is of the greatest value in improving the road as a foundation.

"Progressive road development" utilizing time, weather and traffic, which cost nothing, is a means of economy, of durability and general efficiency which this country in its road policy cannot afford to neglect at any time.

1,500 Fires a Day

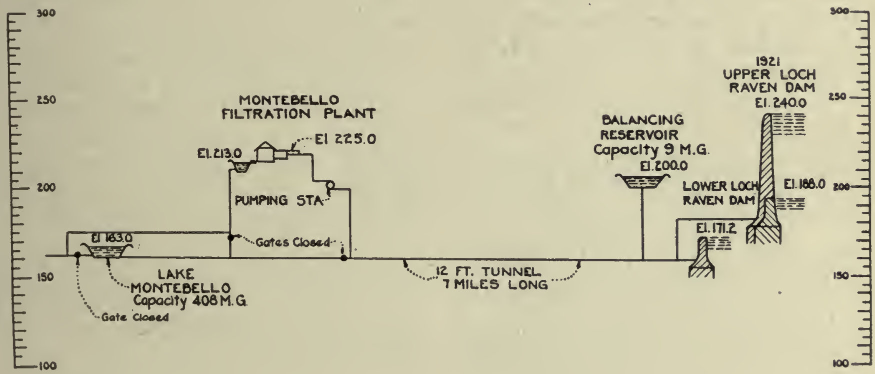
There will be 1,500 more fires to-morrow, another 1,500 day after to-morrow, and so on, sometimes a few more and sometimes a few less, but averaging pretty close to 1,500 for each day.
—*National Board of Fire Underwriters.*

A Balancing Reservoir

By Wm A. Megraw

Water Engineer, Baltimore, Md.

A SO-CALLED balancing reservoir has recently been completed in connection with the Gunpowder River improvements to the water-supply of Baltimore. The reservoir was constructed as a means of limiting the pressure on the tunnel conducting water from the Gunpowder River to the city. The accompanying diagrammatic sketch shows the reservoir with respect to the other parts of the water-works to which it is related.



DIAGRAMMATIC SKETCH
SHOWING BALANCING RESERVOIR IN RELATION
TO PARTS OF WATER WORKS AFFECTED
BY RAISING LOCH RAVEN DAM

The first Gunpowder works, which were completed in 1888, are composed of a low masonry dam across the river at Loch Raven, now known as the lower dam, Lake Montebello, a tunnel 12 feet in diameter and 7 miles long from Loch Raven to Lake Montebello, and distributing mains from Lake Montebello to the city. The second Gunpowder works, which were completed in 1915, are composed of a low dam, now known as the upper dam, a filter plant, a pumping station to raise water from the tunnel to the filters, a filtered water reservoir and large distributing mains from the filtered water reservoir to the city. Upon completion of the filters, valves on the conduit leading to and from Lake Montebello were closed, and the low-service zone of the city took the greater pressure, due to the higher water surface in the filtered reservoir. With this new system of operation, the tunnel was subjected to an additional head of 17 feet, represented by the difference in elevation between the upper and lower dams. The third Gunpowder works were started in 1920 and are now nearing completion.

The upper dam, now being increased from elevation 188 to elevation 240 above mean tide, will increase the storage from 1.5 billion gallons to 23 billion gallons. If the tunnel were strong enough to sustain the additional head, it would be possible to supply the filters by gravity for most of the time and resort to pumping only when the water surface in Loch Raven reservoir dropped considerably below the crest of the dam.

The tunnel is 12 feet in diameter. For about 6 miles from the city end, it is deep below the ground surface in hard rock free of seams, and is unlined. For the remainder of its length, about 6,000 feet, the tunnel is much shallower, passes through mica schist and seamy limestone and is lined with brick. Pressure tests were made on the tunnel by closing the gates at Loch Raven dam and allowing water to pass from the basins to the filter plant back into the tunnel. The tests proved that the head on the tunnel cannot be much increased without endangering its safety and causing excessive leakage. The tunnel might be strengthened by lining it with concrete, but can be spared from service only four days at a time. We estimate that three years would be required for lining it throughout, during which period of successive watering and unwatering, pressures throughout the low-service zone in the city would change with every change of operation. Further, the city has been faced with a water famine with every dry year, so filling the large impounding reservoir as soon as possible takes precedence over all other water-works consideration, and the city may not wait for a tunnel lining. An outlet was provided in the new Loch Raven gate-house for an additional tunnel, which should be built when the operating costs of the increasing pumpage equal the carrying charges on a new tunnel.

As the tunnel cannot be operated under much additional pressure, means of relieving the pressure to be imposed by the high dam had to be found. If the entrance of water through the tunnel could be exactly regulated, the head would not be increased, but the flow through the tunnel must vary from hour to hour with the fluctuating demands of the city, and the gate openings at Loch Raven cannot be adjusted to follow immediately the change in demand. If a pump were thrown out of service, or the electric plant momentarily failed, throwing all the pumps out of service, pressure would rapidly build up in the tunnel. If water were passed from the tunnel directly into Lake Montebello, pressure on the tunnel would be relieved, but it would be necessary to discard the existing pumping station and install a new station on the shore of the lake to pump from the lake to the filters against a 50 per cent higher head than before.

It was recalled that water stood in an abandoned quarry, located approximately over the tunnel and about 4,300 feet from Loch Raven, which was dry before the second Gunpowder works were built, and that the surface of this water rose when storm waters flowed over Loch Raven dam. The quarry occupied a natural depression in the hills, which might be converted into a reservoir by throwing a low dam across the hills and provide a water surface at elevation 200, which was predetermined as desirable. A water surface at elevation 200 will increase the head on the tunnel 8 feet, and its carrying capacity to as much as the impounded river is estimated to furnish, and will reduce the pumping head about one-fifth.

The function of a balancing reservoir is to supply the deficiency to the pumps when too little water is being admitted to the tunnel, and to absorb the excess when too much is being admitted. The cost of the balancing reservoir was estimated to be about one-tenth that of a new pumping station. Plans were prepared and a contract was awarded to Thomas Mullen, of Baltimore, on September 10, 1921, for building the reservoir and appurtenances. All work was completed in April, 1922.

Features of the Reservoir

The reservoir is irregular in outline. The bottom is a natural clay overlying rock. The dam forming the closure in the hills is of earth taken from the bottom and sides of the reservoir and rolled in 6-inch layers. The inside slope of the dam is one on three, and the outside slope one on two. The inside slope is lined with concrete slabs. The old quarry occupies one corner of the reservoir. A vertical shaft through soft rock provides communication between the tunnel and the reservoir. The shaft is 12 feet in diameter and is lined with reinforced concrete. Six 36-inch-diameter flanged openings are arranged radially around the shaft, their inverts at elevation 190, which is the elevation of the reservoir bottom. The dam is at the opposite side from the shaft and, as the original ground surface sloped away from the shaft toward the dam, it was necessary to regrade a portion of the bottom, in order that the entire contents of the reservoir may empty through the shaft into the tunnel.

The greatest depth of water is 10 feet, so with small variation in head, the entire contents is available. The capacity is about 9 million gallons. A concrete-lined channel 20 feet wide at the bottom, having sloped sides, pierces the hillside beyond the dam to serve as a spillway.

The electric current feeding the pumping station is occasionally interrupted, whereupon the pumps run backwards and a shock is produced by the contact between the water moving forward in the tunnel and the water moving backwards from the filter plant. The contract provided a second shaft 12 feet in diameter over the tunnel about 300 feet from the Montebello pumping station, with the top open and at elevation 201, to provide overflow and relief for the shock of surging waters. Entrance to the tunnel at Loch Raven is controlled by eleven 3 feet 6 inch by 6 inch sluice-gates placed at three elevations.

On April 11, 1922, the relief openings in the New Loch Raven dam were closed, allowing water to rise back of the dam. On May 6, the surface had risen to elevation 201, and gate regulation was then necessary to prevent water in the balancing reservoir from wasting over the spillway. Gate regulations must continue until water overtops the Loch Raven dam, after which it probably will be desirable to set the gates, permitting a portion of the excess flow of the river to fall continuously over the spillway at the balancing reservoir, thus saving attendance and wear and tear of the gates. The height of water in the gate-chamber back of the gates indicates the height of water in the balancing reservoir, and a self-recording gage gives the gateman all the information he needs. A turbine pit was left in the gate-chamber in which an hydro-electric unit may be placed, for mechanically operating the gates and for lighting the dam.

The total cost of the reservoir and all the special features was approximately $60,000.

Chicago's Eighteen Municipal "Experts" Go to Europe

Reprinted from *Engineering and Contracting*

OUR readers will be delighted to know that 18 of the leading municipal experts of America have been sent to Europe at the expense of the city of Chicago. The 18 are so well known to municipal engineers that merely to name them will be sufficient assurance that their reports on European pavements, sewers, climate and scenery will be eagerly awaited by every municipal engineer in America. The members of this investigating committee are Mulcahy, Toman, Coughlin, Hogan, Powers, Agnew, Moran, Kavenagh, Jensen, Klein, Lynch, Govier, Devereux, Cepak, Rutkowski, Czekela, Kovarik, and Adamowski.

In addition to being experts on municipal engineering, these men are members of the Chicago City Council committee on streets and alleys, and are thus doubly qualified to prepare a report on European highways that will, we doubt not, revolutionize American engineering practice.

Chicago has unfortunately shown its usual parsimony by giving these aldermen only $19,500, or barely $1,080 each, with which to defray the expenses of this trip.

City Engineer Murdoch was not invited to accompany the 18 aldermanic experts, we understand, possibly on the theory that an engineering education would so greatly hamper him as to make his conclusions useless, but more likely on the theory that an engineer could easily learn from books and magazines all that pertains to streets and alleys, whereas an aldermanic highway expert must see things with his own eyes. And, after all, there is merit to this latter theory, for not every alderman can read an engineering description or interpret an engineering drawing.

The trip is not to be entirely given over to a study of streets and alleys. One of the Chicago daily papers tells us that "Incidentally the aldermen will take a trip down the Rhine, give the Alps the once over, glimpse the war-riven territories, and get a chance to see by comparison whether prohibition is a success in the United States."

The committee has issued a proclamation for the benefit of any taxpayers who might question the necessity of sending 18 aldermen to do what is normally regarded as the work of one man—the city engineer. The proclamation contains 47 reasons for the 18-man-power trip, beside the two obvious reasons (1) a study of streets and (2) a study of alleys. The 18 aldermen belong to 12 other committees, and Europe is expected to assist them in solving Chicago problems in every one of the 13 branches of aldermanic committee work. We don't know the province of each of the 12 committees, but in a city as large as Chicago the wonder is not that there are only a dozen committees, but, rather, that there are not a gross.

The Constitutionality of Zoning

By Alfred Bettman

Of the Cincinnati, Ohio, Bar

FOR a time the progress of zoning cities in the United States was retarded by the fear that the zoning ordinances would be held unconstitutional by the courts. This fear has now been removed by the decisions of the courts.

Based on the Police Power

The power to zone cities, that is, to regulate by districts the height, bulk, and uses of buildings, is upon analysis simply an application under modern conditions of time-honored principles of law. That one man should not be permitted to use his property in such a way as to injure another, is an old maxim of the law. The community has always had the right to prevent and abate what have been called nuisances, that is, the uses of property which injure the comfort or health of the neighborhood by obnoxious odors, excessive noises, or other offenses to the human senses. There has always existed the right to prevent the owner of property abutting upon a street or other highway from obstructing the use of the highway by the public. There has always been recognized the right of the community, in the interest of the safety, comfort and health of its inhabitants, to prohibit an over-congestion of population within a designated space.

Zoning Involves No New Principles

When analyzed, zoning regulations will be found to be simply a modern application of these recognized principles. Regulation of the bulk of an apartment or tenement house is obviously the prevention, in the interests of public health and safety, of over-congestion of population within a small space. Regulation of the height of an office building is obviously, in addition to its fire-prevention aspect, a means of preventing congestion of the street in front of the building by preventing the gathering at this one spot in the city of such a number of vehicles or persons as will result in an obstruction of the flow of public travel along the street. Zoning the city so as to separate to some extent the industrial and residential portions thereof, is obviously a method of protecting the homes against the noises usually present in large industrial establishments and the noises and dangers of industrial street traffic. As stated by the Supreme Court of Massachusetts in its opinion, recently rendered, on the constitutionality of a zoning law (House—No. 1774, May, 1920) 127 N. E. R. 525:

> " . . . The suppression and prevention of disorder, the extinguishment of fires and the enforcement of regulations for street traffic, and other ordinances designed rightly to promote the general welfare, may be facilitated by the establishment of zones or districts for business as distinguished from residence. Conversely, the actual health and safety of the community may be aided by excluding from areas devoted to residence the confusion and danger of fire, contagion and disorder which in greater or less degree attach to the location of stores, shops and factories. Regular and efficient transportation of the bread-winners to and from places of labor may be expedited. Construction and repair of streets may be rendered easier and less expensive if heavy traffic is confined to specified streets by the business there carried on."

Such zoning is, furthermore, a means of promoting public prosperity and standards of living, by guarding against the demoralization of real estate values and consequent lowering of living standards which are apt to ensue from the invasion of a residential district by industrial uses. So every detail of a well-drafted zoning ordinance will be found on analysis to be simply a logical method of avoiding and preventing those developments which experience has shown to be detrimental to public health, safety, morals and prosperity.

The power to zone or district cities arises under what is known as the police power. The police power is simply the general governmental power which controls or regulates the individual person and individual property in the interest of community welfare. It is, in short, the whole reserve governmental power engaged in the promotion of health, safety, morals, comfort, convenience, prosperity and welfare. As stated by the Supreme Court of the United States in Chicago, Burlington & Quincy

Railroad v. Drainage Commissioners, 200 U. S. 561, 592:

> "We hold that the police power of a state embraces regulations designed to promote the public convenience or the general prosperity, as well as regulations designed to promote the public health, the public morals or the public safety . . . And the validity of a police regulation, whether established directly by the state or by some public body acting under its sanction, must depend upon the circumstances of each case and the character of the regulation, whether arbitrary or reasonable and whether really designed to accomplish a legitimate public purpose."

Naturally governmental power adjusts itself to the needs of the time, so that a regulation in 1921 may become constitutional not because the Constitution of 1921 differs from the Constitution of 1789, but because old principles are being applied to new situations. In the oft-quoted language of Mr. Justice Holmes of the Supreme Court of the United States:

> "In general, police power extends to all great public needs. It may be put forth in aid of what is sanctioned by usage or held by the prevailing morality or strong and preponderant opinion to be greatly and immediately necessary to the public welfare" (Noble Bank v. Haskell, 219 U. S. 104).

Like every other exercise of the police power in the United States, all the various classes of zoning statutes and ordinances have been brought into court. In some cases where the ordinance was arbitrary in its nature, the courts have invalidated it; but these cases have been rare. Zoning ordinances have been overwhelmingly upheld by the courts, and no comprehensive ordinance has ever been held invalid by the courts.

Height Regulations Upheld First in Massachusetts

As height and bulk regulations historically preceded use regulations, they naturally first received court adjudication.

The leading case on the subject of height regulations is Welch v. Swasey, which was concerned with the Boston, Mass., ordinance which divided the city of Boston into two height districts, one a business district and the other a residential district, with different height limitations for each. This was upheld by both the Supreme Court of Massachusetts and the Supreme Court of the United States (193 Mass. 364; 214 U. S. 91). And there has never been since that decision any doubt of the right to control building heights in the interest of public safety and in the interest of public health and convenience by avoidance of congestion and instability of real estate values and by equitable distribution of light and air. In the recent opinion rendered by the Justices of the Supreme Court of Massachusetts on the validity of a comprehensive city zoning law, this right to regulate heights by districts was again affirmed. Basing height regulations upon street width is so obviously a reasonable method as to fall well within the decisions which uphold reasonable and comprehensive height regulations.

Bulk Regulations Based on Tenement House Laws

The right to limit the bulk of buildings occupied by human beings, whether for business or habitation, has never been subject to much dispute. Tenement house laws specifying the relative proportion in the case of any lot of that which may be built upon and that which is to be devoted to open spaces, have been upheld with practical uniformity by the courts. The relationship of such laws to public health and comfort is too obvious to require pointing out. The modern zoning ordinance goes somewhat further, perhaps, than this mere regulation of the density of population upon the individual lot. It represents an attempt scientifically to control the density of population of all the people of the city, both when at work and when at home. The principle is the same, however, and comprehensive zoning ordinances containing these bulk regulations have been uniformly upheld by the courts, and without much struggle.

Provision concerning yards and courts such as contained in the Mansfield, Ohio, ordinance,[1] are recognized modes of regulating the bulk of buildings, as it is called, in the interest of public health and comfort and convenience. This ordinance also provides for this regulation by means of building or setback lines measured from the center of the street. This particular mode of bulk regulations has not yet been passed upon by the courts, but as it is an obviously reasonable method of controlling congestion of habitation and traffic and is, in this ordinance, worked out comprehensively and by districts, it would seem to fall within the logic of the decisions and therefore to be within the police power.[2] The only feature of the bulk regulations about whose validity there is, in the light of the decisions, considerable doubt, consists of those provisions which provide building lines governed by the actual front line or lines of existing structures.

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[1] This article was orginally written with reference to the proposed zoning ordinance of Mansfield, Ohio, which accounts for the reference to that ordinance and the special citation of Ohio cases.

The chief struggle in the courts has centered around use regulations. Does the police power include the power to prevent a use of a particular lot of a nature not immediately offensive to the neighboring properties, where such prohibition is a part of a general scheme to lay out a city in such a way as to protect the health and comfort of the community and promote its prosperity by stabilization of its land values and its living standards? Does the police power include the right, for instance, to prohibit the use of a particular piece of property for an apartment house, even though the apartment house itself be built according to the highest standards, where that prohibition is a part of a general plan of the development of all the land within the city in the manner which will best promote the prosperity, health and convenience of the whole community?

While the answers to these questions have not been uniformly favorable, in general comprehensive zoning ordinances have been upheld, and the tendency is distinctly favorable to these ordinances.

The Leading Case

The leading case is the case of Hadacheck v. Sebastian, 239 U. S. 394. That case was concerned with the first comprehensive zoning ordinance of a large city, namely, Los Angeles, Calif. The ordinance divided the city into residential, commercial and industrial zones and, in some instances, worked retroactively so as to prohibit the then existing use of some property within the city. This is not generally a feature of American zoning ordinances, which ordinarily do not attempt to work retroactively and interfere with an existing use of an existing structure. The value of the Hadacheck case comes from the fact that it was a recognition by the Supreme Court of the United States of the validity of the zoning principle, even where at specific spots that principle might work retroactively.

In the later case of Cusack v. Chicago, 242 U. S. 526, a Chicago ordinance excluding bill-boards from residential neighborhoods was upheld.

There have been decisions in some of the states adverse to particular ordinances, but in all these cases the ordinance was not a comprehensive zoning ordinance covering the whole city and worked out as the result of a zoning study.[3] The unfavorable decisions represented arbitrary laying out of particular zones not a part of a comprehensive plan. There have been a few adverse decisions on some special phase of a general ordinance which struck the court as unreasonable. The decisions in Minnesota are an example of the trend towards favorable rulings upon districting ordinances. When the Minneapolis ordinance first came before the Supreme Court of that state, in a case involving the exclusion of stores and apartment houses from certain districts, that court, though by a sharply contested majority and minority opinion, declared against the ordinance (State ex rel. Lachtman v. Houghton, 158 N. W., 1017, and State ex rel. Roering v. Minneapolis, 162 N. W. 477). A year or so later the same court upheld the exclusion of an inoffensive industrial use from a residential neighborhood (State ex rel. Banner Grain Company v. Houghton) in an opinion which is a very distinct judicial sanction of the principle that the preservation of property value is itself a legitimate motive or purpose in the exercise of the police power, and that an impairment of the use of a district for residence purposes would itself be sufficient to uphold the exclusion. As an indication of the tendency of the courts in these cases, this is a most encouraging development. Even those courts which at first did not completely visualize the fact that the modern zoning ordinance is simply a modern application to modern conditions of old and firmly established principles, have come to realize that zoning is a way of so distributing the uses of property within the city as to best promote public health, safety and prosperity and therefore fall within the unquestionable scope of the police power.

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[2] Since the writing of this article, the Supreme Court of Connecticut in the case of Town of Windsor v. Whitney, et al., 95 Conn. 357, has made an important and encouraging decision which, by implication at least, fully supports this position. In that case the Town Planning Commission had planned the street system, including the street system proposed for a tract which had not then been laid out or subdivided, and this plan included building or setback lines. Thereupon, the owner of this tract made a plan of subdivision which, in its street building line locations, did not correspond to the official town plan. The Court held that this owner could be enjoined from establishing and maintaining street, building and curb lines which departed from the official plan.

[3] Since the writing of the above article, the Supreme Court of Missouri, in the case of City of St. Louis v. Evraiff, et al., rendered a decision which may be thought adverse to this statement. The particular case involves the establishment of a junk-yard in a zone in which such use was prohibited, and the Court took care to state that its decision in favor of that particular junk-yard was not to be taken as applying to the remainder of the zoning ordinance. The principles enunciated in the decision, however, would be adverse to zoning itself. The decision created so much public disappointment that the full bench of the Supreme Court of Missouri authorized a rehearing, and the case has been reargued with the filing of new briefs. The decision on the rehearing has not been rendered.

Trend of Recent Decisions

Two recent Ohio decisions show the trend of judicial opinion on use regulations. The first of these is the case of State ex rel. Max Morris v. City of East Cleveland. The case was heard twice and decided twice by two different judges, and each time the zoning ordinance was upheld (Ohio Law Bulletin of March 15, 1920—Ohio Law Reporter of August 23, 1920). The case was an attack upon that feature of the East Cleveland ordinance which prohibited apartment houses in certain neighborhoods. This prohibition was sustained by the trial court, and the decision has become final by the dismissal of the appellate proceedings on a point of procedure. The Court, quoting from Froelich v. Cleveland, 99 O. S. 376, said:

> "The state and municipalities may make all reasonable, necessary and appropriate provisions to promote the health, morals, peace and welfare of the community, but neither the state nor the municipality may make any regulations which are unreasonable. The means adopted must be suitable to the end in view, must be impartial in operation, and not unduly oppressive upon individuals, must have a real and substantial relation to their purpose, and must not interfere with private rights beyond the necessities of the situation." (Froelich v. Cleveland, 99 O. S. 376, syllabus 3).

And then proceeded to lay down the following tests:

> "This ordinance, then, is not a valid exercise of the police power only (1) if it does not come within the purview of that power, by promoting the health, morals, peace and welfare of the community, or (2) if it is unreasonable, arbitrary, discriminatory, and not uniform in operation."

And concluded:

> "The evidence herein would tend to support a claim that the purchase of this property by the relator was the immediate occasion of the city taking up the question of a zoning ordinance. There appears to be no evidence, however, to substantiate the claim that the ordinance was drawn hastily and to meet only this particular case, and for the benefit of the residents of Grasmere and Stanwood Streets, particularly. To the contrary, the record shows a systematic study of the conditions of the city, preliminary to the mapping out of the zones, and a careful preparation of the ordinance. It appears generally from the evidence, with particular reference to map, Plaintiff's Exhibit "B", that the zones are fairly constructed to carry out the purposes of the ordinance. Those parts of the city already largely devoted to manufacturing are in Zone "A"; Zone "B" embraces chiefly the main thoroughfares; Zone "D" includes the territory which is either free from apartments, or in which there is but an occasional building of this character.
>
> "There are instances where it might appear that some street or section, in accordance with this general plan, should have gone into one zone, rather than another, but clearly this is not for the Court to determine. The divisions made by the ordinance appear to be well within the legislative discretion, and not subject to be held arbitrary or unreasonable by this court."

The other case arose in Cincinnati. It did not represent any part of a comprehensive zoning ordinance. The city had had for many years a general nuisance ordinance which excluded certain types of industrial plants from residential neighborhoods, defined residential neighborhoods, and permitted a residential neighborhood to itself vote to admit an industrial plant falling within the classes enumerated in the ordinance. To exclude a proposed creamery in a certain residential neighborhood, the City Council enlarged the classes of industries enumerated by the ordinance by including creameries and changed the definition of a residential neighborhood. The proposed creamery company had gone so far as to acquire the land and to make its plans, and the building permit was held up until the Council could perfect the new legislation. The United States District Court for the Southern District of Ohio upheld this ordinance, basing its decision partly on the case of the State ex rel. the Ohio Hair Products Company v. Rendigs, 98 O. S. 251, in which, even after the issuance of a building permit, the city of Cincinnati passed an ordinance barring in a residential district the establishment of a plant for cleaning or renovating animal hair, which ordinance was sustained by the Supreme Court of Ohio. There was no appeal in the creamery case, so this decision is final. Though the Supreme Court of Ohio has not yet been called upon to pass on the question of a general zoning ordinance, the trend of decisions in the lower courts and in the Supreme Courts of other states and the unmistakable authority given by the decisions of the Supreme Court of the United States, demonstrate the validity of such an ordinance.

Municipal Reference Service for the Small City

By Elizabeth Howard West

State Librarian, Austin, Tex.

At present, municipal reference service is confined practically to our large cities. Smaller cities either do not recognize its value or consider it a luxury beyond their means. As a matter of fact, the employment of a specially trained librarian, with even a moderately good municipal reference collection, will prove a real investment even for a comparatively small city. Such a collection consists chiefly of carefully selected books by experts on general city administration and on special civic and related activities; standard municipal periodicals; federal, state, and municipal documents; pamphlets; catalogs of supplies needed by the city government; clippings, and material collected by correspondence on points not covered in print. A working collection of this kind is not expensive. The chief cost is the labor of gathering, for much of the material can be had free, or at small cost, by a person who knows how and where to get it.

Such a librarian, keeping in touch with the municipal government, knowing its problem, can very often unobtrusively gather together data of inestimable help to the municipal officials who are working on the problem. The service must, of course, be rendered tactfully and without its appearing officious. The experience of the municipal reference libraries in the larger cities, and of the special libraries in connection with progressive business corporations, is that information covering the most up-to-date methods of handling the problems in question will often result in the saving of thousands of dollars for the municipality by suggesting to the city officials more economic or expeditious methods of arriving at the solution of the problem under consideration. Lacking such up-to-date information, the municipal executives, however good their intentions, are likely, on the one hand, to miss valuable short cuts which make for progress, and, on the other hand, to fail to avoid mistakes whose costliness has been demonstrated in other cities.

It will usually be found most economical, especially in the smaller cities, to have such a municipal reference service in connection with the public library. The same tools can thus be used by both the general library and the municipal library, and a large part of the material can be made available for both general and municipal reference. It is usually desirable, however, to have the special municipal material housed in the city hall, where the special librarian should have his quarters. One vital, specific advantage of such a service should be kept in mind, namely, that the city government intelligently using a municipal reference service will have a much better opportunity to meet on their own grounds the applicants for franchises and public contracts and to reach such agreements as will insure to the public the maximum of service at the minimum cost. Used in this way, the library will prove a real investment.

Prostitution: A Community Problem

By C. C. Pierce

Assistant Surgeon General, U. S. Public Health Service

AMERICAN cities are gradually realizing what a serious menace prostitution is and how essential for human health and happiness is its elimination. Prostitution endangers family life. Not only does it encourage late marriages, but also it is often responsible for the breaking up of homes. It degrades men and women alike. It is closely associated with many forms of crime. In some cases it has been used in the development of a corrupt political system. It is the chief source of infection for the venereal diseases. The control of gonorrhea and syphilis, so long disregarded, is now recognized as one of the most pressing public health problems. These diseases are responsible for many early deaths, for much blindness and insanity. In their effects upon the next generation, they endanger racial survival. The close relation between prostitution and venereal diseases alone justifies every possible effort for the solution of this problem. No city where prostitution is rampant can justly claim that its health conditions are above reproach,

Two Futile Methods

To the American city, three possible methods of dealing with prostitution present themselves. The first is hardly a method at all, inasmuch as it consists in ignoring the evil. Like the ostrich which is reputed to hide its head in the sand when pursued, humanity is to conceal from itself this menace to individual and social health, in the hope that it will miraculously disappear. Things do not work in this way, however. So great a menace is prostitution, so dangerous to the welfare of all, that unchecked it will threaten national existence. No city can long follow this method of neglect and prosper. The community does not exist in this country where this method would long be tolerated.

The second method is of greater importance because the minority who favor its adoption are numerous and active. This is the method of the segregated district. Prostitution is declared to be a necessary evil and is permitted to exist within a certain section of the city. Prostitutes, as long as they remain in the segregated district, are given police protection. In some instances an effort is made in connection with this method to establish a system of medical inspection. This method has been used extensively in European countries and has from time to time been tried in many communities in this country. In the recent emergency, practically all segregated districts were abolished, but today, with less obvious necessity for venereal disease control, there is a tendency toward their return.

The case against the segregated district, or red light district, is unanswerable. The fact is that by no means all the prostitutes can be corralled within one district. Segregation does not segregate. Such a district creates new prostitutes. It makes it easy for girls to begin a career of commercial prostitution and for men to find satisfaction. The segregated district breeds disease. The medical inspection of prostitutes has proved to be a ghastly farce. Most prostitutes are infected with a venereal disease, and on account of their promiscuity they infect others at an alarming rate. It is now recognized, even in foreign countries, that the segregated district fails to solve the problem of prostitution.

It Can Be Suppressed

There remains the method of suppression. Those who are interested in the continuance of the segregated district maintain that prostitution is inevitable. Experience demonstrates irrefutably, however, that this is untrue. Vigorous efforts to eliminate prostitution have proved altogether successful. The experience of the United States during the war, when repressive measures were strictly applied in the vicinity of all military establishments, and segregated districts were eliminated in practically every city, shows what may be accomplished.

Recently the United States Public Health Service undertook a study of public opinion on the question of prostitution. It sent out a large number of questionnaires to mayors, chiefs of police, bank presidents, industrial leaders, representatives of labor groups, asking them their opinion of the policy of rigid repression. Approximately 1,700 answers were received from 572 cities. Over 70 per cent stated that they believed open houses of prostitution are a menace to public health and should be abolished in every community. "The worst possible policy that could be tolerated in any city," wrote an Indiana city attorney, "is segregation." "Besides degrading the morals of the entire community," commented a Utah printer, "they spread the most terrible and disgusting diseases to the innocent as well as the guilty. There never was a clean and safe house of prostitution and never can be."

The Legal Procedure

The policy of suppression involves the enactment of adequate laws and ordinances and their rigid enforcement. In most cities there is already a law or ordinance against prostitution. This must be supplemented by ordinances aiming at the prevention of clandestine prostitution. The clandestine prostitute usually depends upon the cooperation of a bell-boy, hotel clerk, lodging-house keeper or taxicab driver. By breaking up this cooperation, her activities may be much restricted. An ordinance requiring the licensing of hotels and lodging-houses, and putting a responsibility upon the owner of the premises, as well as upon the occupier, has been found effective. Where the tin-plate ordinance, so-called, has been passed, which requires that the name and address of the owner be prominently displayed on all hotels and lodging-houses, real results have been apparent. Licenses for taxicabs and for-hire automobiles should include a provision for revocation upon proof that they have been occupied or used for purposes of, or in aid of, prostitution. Public dancehalls, which often become recruiting centers for prostitution, should be licensed and carefully supervised. The United States Public Health Service in its efforts to control the spread of venereal diseases has prepared model ordinances upon these subjects which have already been adopted in many cities. Copies of these model ordinances may be secured by writing to the Surgeon General, U. S. Public Health Service, Washington, D. C.

So closely is the whole problem of prostitution allied to the problem of venereal diseases that a few more facts may not be out of place. In all cities, by a state enactment, cases of venereal diseases must be reported to the health authorities. This is to insure continuance of treatment. As long as every effort is made to prevent further infection by careful treatment, the patient's name and condition are carefully safeguarded. But in some states if a person refuses treatment and persists in conduct which is likely to infect others, quarantine may be established and the house where he lives placarded. In many cities the sale of venereal nostrums is prohibited, and in an even larger number there is regulation against the advertising of such remedies. This is in order to insure that persons infected receive the best treatment possible.

When laws against prostitution are enforced, facilities must be provided for the detention of women and girl delinquents. Every case, of course, requires special handling. Some will need treatment for venereal diseases, some are feeble-minded and should be segregated, some may with proper guidance be prepared for return to normal living. Municipalities will find it necessary to provide homes of detention, industrial farms and other institutions where those charged with sex crimes may be detained and rehabilitated.

While emphasis has been placed throughout this discussion upon the female prostitute, it is recognized by the Public Health Service and all other agencies aiming at the elimination of prostitution that the male partner is equally guilty. Equal treatment for men and women apprehended in prostitution is now demanded by public opinion. Recently the Supreme Court of a certain state has affirmed the action of a lower court in awarding a wife $10,000 damages for having been infected with syphilis by her husband.

Experience has proved that prostitution can be prevented. The legal methods which may be used are now fairly clear. No city which values its good name, which is earnestly interested in the welfare of its citizens, will allow this evil to continue. Public opinion is strongly in favor of the enforcement of the law.

Detecting Shortages, Securing Evidence, and Prosecuting Offenders in Short Weight Cases

Valuable Discussion for Officials in Charge of Weights and Measures Departments

By R. F. Barron

Commissioner of Weights and Measures, State of Minnesota

IT is recognized by every official charged with the enforcement of weights and measures laws that the prosecution of violators of those laws is one of the most delicate as well as one of the most important problems which he has to solve. Some offenses are of so flagrant a nature that there can be no doubt of the advisability of prosecution, while, again, many technical violations which are classed as misdemeanors by the law are of such a nature that an inspector would hardly be justified in prosecuting. Between these two extremes we are continually being confronted with many cases each of which must be settled on its own respective merits, and no complete and rigid specifications can ever be adopted which will satisfactorily cover the subject of short weight or measure prosecution.

A Remarkable Example

A weights and measures inspector in the northern part of Minnesota found a general merchant using a pump which had been rejected the previous day and on which no repairs had been made. Upon inquiry where the nearest justice of the peace could be found, the inspector was informed that the party he wished to prosecute was the nearest qualified justice within twenty miles. Inasmuch as both the merchant and the inspector were reasonable men, it was agreed that the justice should take official cognizance of his own offense, and he proceeded forthwith to fine himself $20 and costs. The fine was remitted to the office the same day, thus making what is probably a unique case among weights and measures prosecutions.

Who Are the Guilty Ones?

Personally, I feel that a vast majority of the men in business to-day are reasonably honest in their dealings with the public, either because it is their nature or because they realize that petty dishonesty is very poorly rewarded. There remains no doubt whatever in my mind that every line of commercial endeavor has its small percentage of out-and-out crooks, and the bulk of supervision work must naturally be aimed at such persons.

We must not overlook, however, the fact that there is a much larger percentage whose indifference and carelessness lead to frequent violations of the statutes, and the man who uses a counter scale an ounce or two out of balance, or who operates a pump he knows to be wrong and says, "I did not have time to look after it," is entitled, in my opinion, to very little consideration. In checking coal and ice deliveries we find surprising variations, and while we realize that the officials of the company in general do not countenance the practice of short-weighing their customers, nor profit by the saving made, our rule is to hold the company liable unless it can be shown that a reasonable effort to protect their customers has been made and that the proper amount of supervision work, which alone will insure the carefulness and honesty of their employees, has been done.

The hardest proposition to handle, in our experience, is the grocer or meat dealer who makes a practice of taking from 2 to 5 cents on each sale and thinks to escape detection because of the small amount involved in each case. Courts are inclined to be lenient with a merchant appearing in answer to a complaint alleging that he delivered a piece of meat an ounce or two short of the weight charged for. It is difficult, of course, for the local dealer or inspector to secure evidence himself against all such concerns, and we find that it is occasionally necessary to call on inspectors from other districts to work where they are not known to the merchants. We find this practice preferable to taking as evidence purchases made by persons not familiar with the work, for inexperienced witnesses are very apt to make a poor showing if the defense is ably handled. In a recent three-day drive with two inspectors we were able to secure six convictions against one meat dealer and three against another, and a judge who had never before taken these small shortages seriously assessed fines aggregating $225 and warned the dealers that the next appearance meant a trip to the workhouse. Some judges are hard to convince, but, giving credit where credit is due, I must say that in general we have found the courts very fair, and, in St. Paul especially, the maximum fine is assessed far more frequently than the minimum.

Some Points for the Inspector

It should be borne in mind at all times that a case which is dismissed or which results in an acquittal because of weak or faulty preparation on the part of the inspector, tends to reflect on the department under which he operates and will not raise him in the estimation of the judge before whom he may have frequent occasion to appear. It therefore behooves the inspector to use extreme care, not only in preparing his evidence, but in seeing that his complaint is properly drawn and the charges only what he is prepared to prove.

We have found it advisable in some instances to avoid in the complaint a statement of the exact shortage found, especially when such commodities as gasoline or ice are involved, where there is a constant change in volume or weight and the inspector's figures would not represent the actual amount delivered, even though the variations would be small. The complaint in such cases is made that the defendant sold a quantity less than he represented, and the figures can be presented as part of the evidence and can then be more easily explained and substantiated.

The practice of making a complete record at the time of the investigation is strongly to be recommended, and no more reliance should be placed on memory than is necessary. The memorandum can be qualified as an exhibit and used to refresh the inspector's memory, as well as being, in the terms of the law, "best evidence." Only recently one of our younger inspectors under a stiff cross-examination became confused in his figures, and it was only the introduction of the State's exhibit "A" in that inspector's handwriting that saved the day.

Too much stress cannot be placed on the importance of making "assurance doubly sure" when the question of the accuracy of the apparatus used in determining the amount of shortage is involved. Even when the commodity is checked back on the dealer's own scales and the seal on these scales shows that they were correct within the allowable tolerance at the time of last test, a further test should be made immediately, or the results obtained in the first instance verified by weighing on other scales, so that no reasonable doubt can exist as to the accuracy of the weights. In any case, it is very necessary to retest the dealer's scales, so that it may be known whether the shortage is the result of a faulty scale or of carelessness or intent on the part of the vendor.

Frequently, of course, it happens that the time spent in perfecting a case to make a presentable showing is apparently wasted, but even though an inspector may feel certain that a plea of guilty will be entered, he may be certain that the first sign of weakness on his part will be the signal for a bitter fight on the part of the defendant.

Acknowledgment.—From a paper read at the Fourteenth Annual Conference of representatives of Weights and Measures Departments, Washington, D. C.

EL PASO & SOUTHWESTERN RAILROAD STATION, TUCSON, ARIZ.

Making the Railroad Gateways of the City Attractive

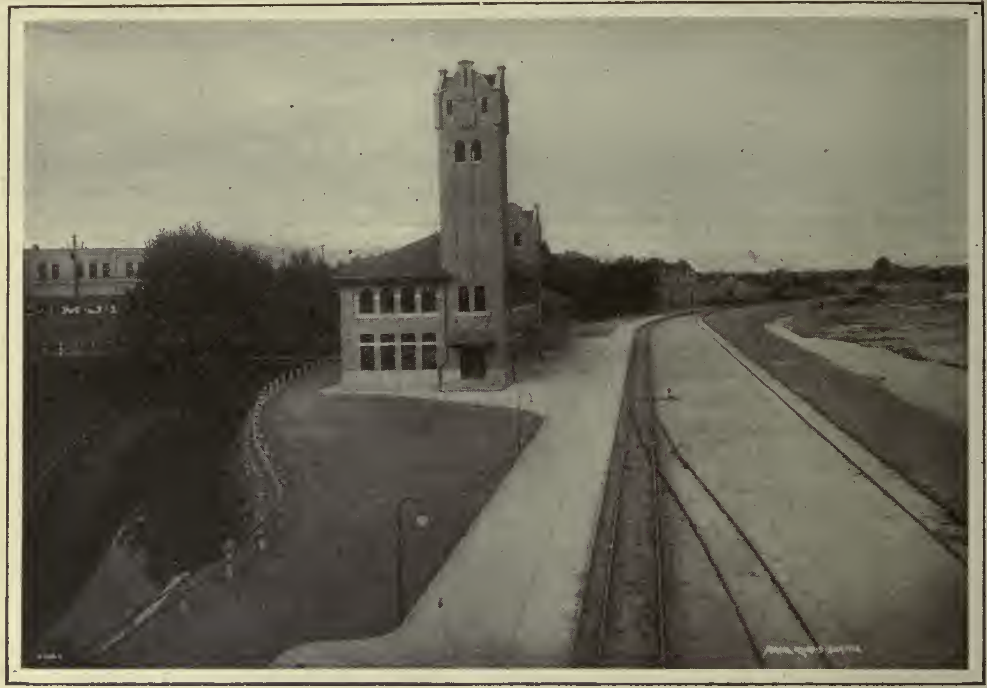
By Ivy L. Lee

Association of Railway Executives

WHEN a city begins to take pride in its appearance, when its self-respect asserts itself, when its vital transformation is a living issue, the citizens become impatient of all street disfigurements and untidy railroad stations. City planning committees or art commissions are then created to try to improve matters. These bodies, besides handling their other constructive duties, are a sort of architectural police whose function is to repress disorderly conduct in brick, stone and iron. Sometimes they are armed with legal powers, and sometimes they rely only on the club of public opinion.

In their praiseworthy efforts to minimize the lesser evils of life and regain some degree of civic dignity and beauty, it is inevitable that zeal is occasionally misdirected. It has even been seriously asked if an entire railway system could not be removed to make way for a waterside park or some other desired improvement. Much patience has been required to explain not only that corporations have rights, but that the city needs the railway quite as much as the railway needs the city; they are virtually partners in the same enterprise, and it is absurd for one to be the declared enemy of the other. A city should extend

ARTISTIC STATION AND VIADUCT OF LONG ISLAND RAILROAD, FOREST HILLS, N. Y.



STATION, MISSOULA, MONT.

A very simple but dignified and pleasing structure

to the railway all the necessary facilities to enable the railway to carry on its business properly, and on the other hand the city can reasonably demand that this business be so conducted that the streets are not disfigured nor the beauty of the town destroyed. Negotiations to this end are now generally conducted in an admirable spirit of fairness, and it can be safely asserted that the railway's representatives seldom fail to respond to the reasonable demands of a municipality.

A Fair and Generous Attitude

The attitude of railways in most cases has been not only just but extremely generous. Three of the largest railways in the country, at a very great sacrifice, built their new station in the city of Washington on the site that was indicated on the plan of the Park Commission, thus making it a part of that great scheme. Not only is that station monumental and handsome, but with its plaza and approaches it contributes a large share to the fulfillment and success of the splendid project that is so dear to all of us who are interested in the creation of the most beautiful capital city in the world.

The railway is the city gate, the portal or vestibule of the town, and it should express this dignified function and take its place as a focal center of great importance. The requirements of the railway, the convenience of the public, structural problems, traffic puzzles—all can be solved in harmonious combination consistent with great beauty.

Improvement in the appearance of railway structures within city limits, such as embankments, retaining walls, viaducts, bridges, etc., contributes greatly to the carrying out of the city plan as a whole. Retaining walls and embankments are, as a rule, unsightly—merely bare, uninteresting masses of raw cement, but with skill and thought and a very little expense they may not only be made pleasing, but may even present a fine expression of strength and power.

The public mind is changing, it is being educated, and there is an increasing demand for order, dignity and harmony in our surroundings. Millions are expended on beauty every year, and the commercial world recognizes its importance as an investment. Even from a cold-blooded, business point of view it is admitted that civic beauty is a financial asset. When we travel, we select the cities that charm us with their parks, drives, monuments and buildings. The traveler is attracted by unspoiled civic beauty and he seeks to pay his tribute to it in substantial form.

The Improvement of Grounds Around Small Passenger Stations

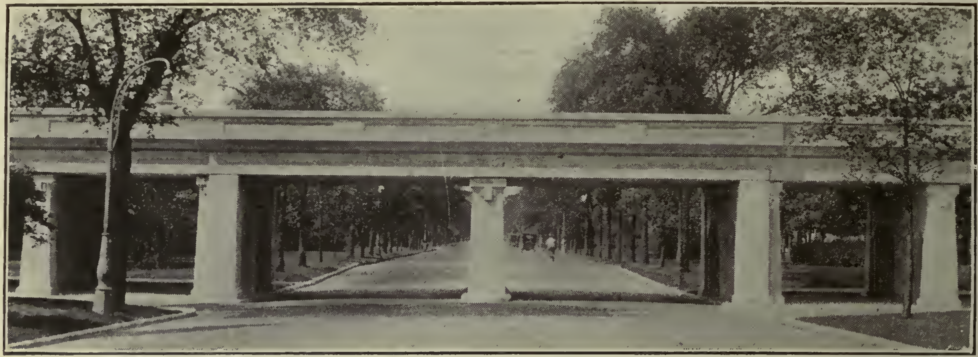
The reclaiming of cinder-beds and dumping-grounds into station parks has shown wonderful development. Telegraph and signal towers, approachable only through tangled weeds, and surrounded by railroad ties, rails and piles of junk, have been metamorphosed into carefully kept lawns with blooms and shrubs.

Not only has the improvement of station grounds been a potent factor in the preservation and beautifying of the right of way of railways, but it is playing a prominent part in civic betterment movements in many communities throughout the country. This work of the railways has been of great benefit to civic commissions, which, in turn, have been of help to the railways. In numerous instances town councils and corporation officials have been so interested in the work of improvement that they have cheerfully granted the privilege of extending these improvements and have even contributed land for the purpose of expansion. The example set by the railway has stimulated civic commissions, as well as officials of towns and cities, to offer prizes for the improvement of private lawns and the proper care of highways and alleys. As a consequence, yards and lawns are given more attention, streets and alleys are kept clear of refuse, and in a general way the beauties of nature are more appreciated. The sanitary effects cannot be overestimated.

The effect of railway gardening upon the traveling public is both beneficial and helpful. It goes a long way towards brightening what under other circumstances would be a tiresome trip. Everybody appreciates flowers, and especially after riding a day or more on a train, through a section of country where only dry, dusty roads and unimproved grounds meet the eye; a railway station where passengers can enjoy green lawns with a few bright flowers is a welcome relief from an otherwise wearisome

SOUTHERN PACIFIC STATION, TUCSON, ARIZ.

Showing softening effect of foliage



CONCRETE VIADUCT OF THE CHICAGO, MILWAUKEE AND ST. PAUL, HUMBOLDT BOULEVARD, CHICAGO

trip. Appreciation of railway gardening can be seen and heard even from children, who will call the parent's attention to the beautiful lawns and flowers. In other words—it pays, and pays handsomely.

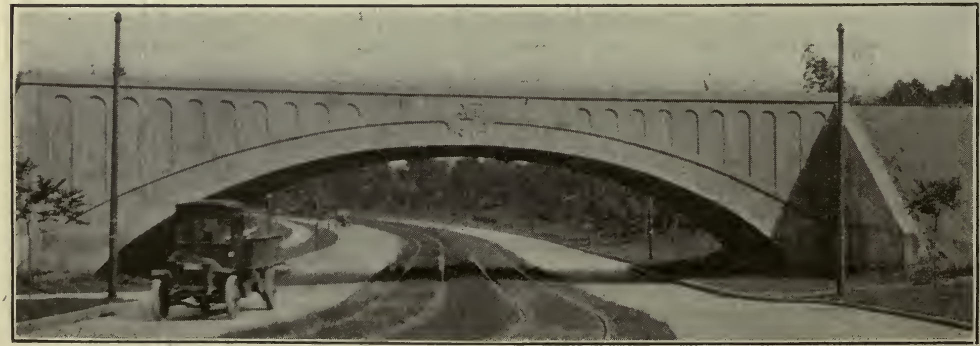
Examples of efforts to bring enjoyment to the traveling public in the form of well-kept lawns and station grounds are given in the accompanying illustrations. These also portray another example of railway enterprise—the reclaiming of rugged and rocky slopes by sodding, and the beautifying of retaining walls, with vines and other clinging foliage. This method not only beautifies the right of way but prevents washouts.

Ornamental Arches Over Streets

Another way in which railways have cooperated with municipalities in a marked degree is in constructing handsome ornamental arches over city streets and boulevards to conceal what might otherwise be eyesores. The elevation of tracks through city streets has of necessity required the construction of viaducts to carry the tracks over the streets. To make such structures as attractive as possible, railways have not hesitated to expend large sums in beautifying them. The recent developments in the art of using concrete have been taken advantage of by railways, and the results have been exceedingly gratifying.

Measures to Relieve Congestion

The rapid growth of American cities has created new problems. The carrying on of manifold activities in restricted areas has brought about serious congestion of traffic in streets and terminals. In working out solutions of such problems confronting municipalities, railways have taken a leading part. In practically every large city examples of the efforts made by railways to ameliorate these conditions are in evidence. Vast sums running into the millions have been expended in constructing so-called detour lines or belt railways to relieve the congested freight and traffic conditions inherent in large centers of population.



ATTRACTIVE RAILROAD VIADUCT FORMING ENTRANCE TO MORGAN PARK, DULUTH

Highway Makes Unique Memorial

An Ohio Banker Bequeaths Money for a Brick Highway

THERE are many forms of memorials, utilitarian and otherwise. Some citizens believe that an impressive mausoleum is the proper type of memorial. Others believe in leaving trust funds for social service work or other equally valuable public activities. It remained for David Presley Campbell, a banker of Utica, Ohio, to bequeath money to purchase the brick for a four-mile permanent highway extending from Utica in Licking County to Hamilton Crossing in Knox County.

FOUR MILES OF BRICK HIGHWAY, A GIFT TREASURED BY THE COMMUNITY

Several years ago Mr. Campbell told a friend on the train that he felt that the most serviceable monument a man could leave would be a permanent brick highway, which for a generation would serve friends and neighbors in his home community. He did not belittle giving money to colleges, hospitals and libraries, but believed that the more serviceable type of memorial would be of more help to the community.

One of Mr. Campbell's donations toward the building of this highway was $30,000 for the brick. He saw to it before his death that two grade crossings on this thoroughfare were eliminated, as he believed that public safety was one of the most important considerations in transportation.

In appreciation of this memorial a two-ton granite boulder carrying a bronze tablet with the following inscription has been erected near the highway:

THE CAMPBELL PIKE
This Tablet Commemorates
the public spirit of
DAVID PRESLEY CAMBELL
of
Utica, Ohio
Whose Splendid Generosity
Made possible the Improvement
of this Highway
A. D. 1920

Roadside Planting

There are places along our roadways where trees are not desirable. On stretches of roads where the soil is naturally wet, the heavy shade cast by certain species of trees is objectionable. Along such stretches of roads the method of planting or spacing may affect the matter of light and air, and species can be chosen which will be practically unobjectionable. Most of the highway planting in the past has been a matter of chance, and there have been few definite plans for any long stretch of roadway.

Where quick results are desired in planting along highways, two species are sometimes used, the idea being to cut out the fast-growing one after the slow-growing one has reached good size. The fast-growing trees are seldom cut out at the proper time, and the result is often the stunting and injuring of the better and more durable trees.

Comparative Bonded Debt of Thirty-two Cities as of January 1, 1922

By C. E. Rightor

Of the Detroit Bureau of Governmental Research

WITH the discontinuance or the partial functioning of the valuable service rendered for many years by the Census Bureau in compiling and publishing financial data of cities, the loss is keenly felt by those who were wont to use "Financial Statistics of Cities." Comparative data are of material assistance in numerous respects. To supply, in some small measure, certain desired statistics of the larger cities, the Detroit Bureau of Governmental Research, through the coöperation of the Governmental Research Conference and city officials throughout the country, compiled the bonded debt of thirty-two of the largest cities.

Obviously, in a one-page spread, the funded debt of the cities could not be shown with the detail that is found in the Census Bureau's publications. However, the figures have the advantage of being more nearly currently published than is possible through the Census Bureau.

It will be noted that the range of per capita debt is from 38 cents for Washington to $195.30 for Cincinnati. The average per capita debt of the thirty-two cities is $80.22, and the median $71.75. Obviously, a great many factors enter into so complex a subject, on account of differences in laws, organization of governmental subdivisions, etc.

Cincinnati, for example, has the largest per capita debt, because the Cincinnati Southern Railway Construction and Terminal bonds must be included. They are a lien upon the property of the city, although the railroad, which is owned but not operated by the city, will undoubtedly meet the debt requirements as needed. New York City is thus crowded out of first place, which it would naturally be expected to occupy because of its population.

It would be natural to expect that Chicago also would have a high per capita debt, but, because for many years that city has had a policy of financing the cost of school buildings through a current tax levy, it drops to twenty-ninth place in the list. The tax levy for 1922 for school buildings is $14,500,000. The effect of the adoption of this "pay-as-you-go" policy in school construction is thus brought forcibly before us, and other cities may profit by studying this method.

The debt of Philadelphia, as reported, includes both the city and the county of Philadelphia, as no separation is possible.

Detroit, twelfth on the list, has experienced a substantial increase in its per capita indebtedness during recent years, because of the fact that in 1916 and 1917 the area of the city was nearly doubled and numerous public services were consequently extended to this unimproved area. The construction of a municipal street railway, represented by $12,050,000 of public utility bonds, is also a factor. Rapid transit and subway bonds in Boston swelled that city's total by nearly $37,000,000, while Los Angeles has harbor improvement bonds outstanding of $6,604,000, and Portland, Ore., port and dock improvement bonds of $11,616,000.

Washington and the District of Columbia are virtually free from any indebtedness, the small balance reported outstanding being the remainder of some 3.65 per cent bonds issued in 1874, to take up several old forms of indebtedness incurred between 1871-74, when the District of Columbia had a territorial government.

The only Canadian city listed is Toronto. It is interesting to note the diversity of bonds issued by that city, which are $32,000,000 for general improvements, $20,000,000 for schools, $16,685,000 water, $10,753,000 light and power, $25,482,000 street railway, $2,080,000 National Exhibition, $840,000 housing, $416,000 municipal abattoir.

Unfortunately, the cities of Baltimore, New Orleans, Seattle, Jersey City, and Columbus did not furnish requested data. It is hoped that the figures for these cities may be included in the next compilation.

COMPARATIVE BONDED DEBT OF THIRTY-TWO CITIES AS OF JANUARY 1, 1922.

Compiled by the Detroit Bureau of Governmental Research, Inc., from Data Furnished by Members of the Governmental Research Conference, and City Officials.

City	Census 1920	Rank in Per Capita Indebtedness	General Bonds	School Bonds	Public Utility	Misc. Bonds	Gross Total Bonded Debt	Sinking Fund	Net Total Bonded Debt	Per Capita Debt
New York	5,621,151	2	....	....	....	....	$1,669,473,059.51	$604,953,708.96	$1,064,519,350.55	$189.38
Chicago	2,701,705	29	$95,845,300.00	$125,000.00	$3,665,400.00	....	99,635,700.00	736,000.00	98,899,700.00	36.61
*1 Philadelphia	1,823,158	11	141,381,871.59	20,366,000.00	53,951,478.41	....	215,699,350.00	48,553,282.03	167,146,067.97	91.68
Detroit	993,739	12	40,421,533.23	31,115,600.00	25,789,114.40	....	97,326,247.63	10,572,818.27	86,753,429.36	87.30
*2 Cleveland	796,836	5	69,337,687.94	20,297,000.00	23,296,463.62	....	112,931,151.56	14,768,537.69	98,162,613.87	123.19
St. Louis	772,897	30	18,448,000.00	3,000,000.00	2,617,000.00	....	24,065,000.00	8,500,000.00	15,565,000.00	20.14
*3 Boston	748,060	8	68,299,801.00	15,583,500.00	1,090,350.00	$36,994,700.00	121,968,351.00	43,929,397.24	78,038,953.76	104.32
Pittsburgh	588,193	13	33,241,200.00	9,825,800.00	9,446,200.00	....	52,513,200.00	4,176,333.57	48,336,866.43	82.18
*4 Los Angeles	576,673	23	1,554,475.00	501,750.00	28,923,800.00	6,604,000.00	37,584,025.00	3,510,488.09	34,073,536.91	59.09
San Francisco	508,410	4	24,068,800.00	7,389,800.00	42,106,000.00	....	73,564,600.00	2,461,400.00	71,103,200.00	139.85
Buffalo	506,775	17	18,510,780.71	8,905,000.00	12,649,429.04	....	40,065,209.75	5,210,278.54	34,854,931.21	68.78
Milwaukee	457,147	25	15,031,950.00	6,918,750.00	2,015,000.00	....	23,965,700.00	3,234,249.96	20,731,450.04	45.35
Washington	437,571	32	4,874,700.00	....	....	....	4,874,700.00	4,707,062.86	167,637.14	.38
Newark	415,609	7	31,425,000.00	11,917,200.00	19,002,000.00	....	62,344,200.00	18,984,615.66	43,359,584.34	104.33
*5 Cincinnati	401,247	1	56,070,381.16	9,056,650.00	15,041,130.48	20,332,000.00	100,500,161.64	22,135,678.89	78,364,482.75	195.30
Minneapolis	380,582	15	16,638,700.00	13,505,500.00	1,800,000.00	....	31,944,200.00	2,606,318.20	29,337,881.80	77.09
*6 Kansas City, Mo	324,410	26	7,939,000.00	7,994,700.00	2,861,000.00	....	18,794,700.00	4,712,764.00	14,081,936.00	43.41
Indianapolis	314,194	24	7,000,500.00	8,456,500.00	....	....	15,457,000.00	956,483.92	14,500,516.08	46.15
Rochester	295,750	19	6,371,600.00	5,222,460.00	10,902,000.00	....	22,496,060.00	2,713,378.34	19,782,681.66	66.89
*7 Portland, Ore	258,288	10	8,295,500.00	368,500.00	8,290,000.00	11,616,200.00	28,570,200.00	3,153,132.46	25,417,067.54	98.41
Denver	256,369	20	260,000.00	2,350,000.00	14,023,600.00	....	16,633,600.00	111,975.00	16,521,625.00	64.44
Toledo	243,109	9	17,171,469.00	9,788,000.00	1,900,000.00	....	28,859,469.00	4,554,418.43	24,305,050.57	99.98
Providence	237,595	28	16,493,000.00	3,947,000.00	2,632,000.00	....	23,072,000.00	13,002,823.16	10,069,176.84	42.38
*8 Louisville	234,891	22	8,893,625.48	2,049,675.52	1,324,360.33	3,394,532.79	15,662,194.12	1,696,294.12	13,965,900.00	59.46
St. Paul	234,595	18	10,862,000.00	3,146,000.00	2,807,000.00	....	16,815,000.00	1,059,856.73	15,755,143.27	67.16
*9 Oakland	216,361	27	5,020,804.19	4,321,195.81	....	....	9,342,000.00	....	9,342,000.00	43.18
Akron	208,435	6	7,083,928.00	6,752,000.00	10,445,000.00	....	24,280,968.00	1,849,465.00	22,431,503.00	107.62
Atlanta	200,616	31	3,224,500.00	380,000.00	1,952,000.00	....	5,556,500.00	2,216,986.79	3,339,513.21	16.65
Dayton	153,830	21	7,361,980.00	1,365,000.00	2,147,000.00	....	10,873,980.00	1,669,382.31	9,204,597.69	59.84
Des Moines	126,468	16	5,902,069.19	....	3,925,000.00	....	9,827,069.19	377,958.50	9,449,110.59	74.72
Duluth	98,917	14	2,502,000.00	2,422,000.00	3,296,000.00	....	8,220,000.00	248,235.76	7,971,764.24	80.59
Toronto, Canada	522,666	3	32,342,663.00	19,741,989.00	56,254,862.00	....	108,339,514.00	18,355,726.00	89,983,788.00	172.16

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*1 Philadelphia Includes City and County of Philadelphia.
General Bonds include all bonds issued for work for which special assessments are levied.
*2 Cleveland School bonded debt as of August 31, 1921.
*3 Boston Bonded debt as of January 31, 1921.
Miscellaneous Bonds: Rapid Transit and Subway $36,994,700.00.
*4 Los Angeles Bonded debt as of June 30, 1921.
Miscellaneous Bonds: Harbor $6,604,000.00.
*5 Cincinnati Miscellaneous Bonds: Steam Railroad $20,332,000.00.
*6 Kansas City, Mo. Bonded debt as of April 17, 1922.
*7 Portland, Ore. Bonded debt as of November 30, 1921.
Miscellaneous Bonds: Port and Dock $11,616,200.00.
*8 Louisville Miscellaneous Bonds: Refunding $3,394,532.79.
*9 Oakland Bonded debt as of June 30, 1921.

Garbage, Rubbish and Ash Collection and Disposal

Summary of Responses to a Questionnaire Prepared by Bluefields, W. Va.

EARLY this year, Clarence E. Ridley, City Manager, Bluefields, W. Va., sent out a well-prepared questionnaire on garbage, rubbish and ash collection and disposal to 106 cities in the United States having populations in most cases between 10,000 and 30,000. Replies were received from 60. Some of these were unable to furnish any useful information, so that the data which he has tabulated are confined to 47 cities. Of these, 32 have municipal collection, 5 being by contract, leaving 27 in which collection is actually made by the city forces.

The amount of garbage collected per unit of population varies greatly, thus showing that collection is not uniform in the different cities. Figures compiled by the U. S. Public Health Service show fairly uniform production in large cities, and it should be uniform in small ones. The average daily collection is 0.55 tons per 1,000 population, but in the responses received to the questionnaire, this varied from over one ton to less than 0.25 tons per 1,000 population.

Of the cities reporting on equipment, 23 use teams only, 7 use teams and trucks and 7 use trucks only. The use of trailers was reported by two cities. Long Beach, Calif., uses trains of wagons, hauled by tractors. About an equal number of cities use one man and two men to each wagon. The periods of collection are shown by the following table:

Cities		Number of collections per week in summer and in winter.
9	:	1 collection in summer and 1 in winter.
2	:	2 collections in summer and 1 in winter.
12	:	2 collections in summer and 2 in winter.
4	:	3 collections in summer and 2 in winter.
2	:	3 collections in summer and 3 in winter.
1	:	6 collections in summer and 6 in winter.

Four cities report a daily collection of garbage in the business district and less frequent collections in resident districts. Fly-tight cans are required in 30 cities, while 5 cities do not require them and one city responds "They are supposed to be." In 30 cities cans are furnished by the householder and in 2 cases by the city. Garbage collection is paid for by a general tax levy in 29 cities, while Glendale charges individual fees and Greensboro, and Sacramento, Calif., Middletown, Ohio, N. C., collect free from the curb, but charge from the rear of the house.

There is as great variation in the cost of garbage collection as in the amount of garbage collected. The following figures are typical:

City	Population	Cost
Alhambra, Cal.	9,096	$ 1,641.00
Florence, S. C.	10,968	5,400.00
Benton Harbor ,Mich.	12,233	6,000.00
Brunswick, Ga.	14,413	12,950.00
Auburn, Mo.	16,985	1,970.00
La Grange, Ga.	17,038	6,000.00
Hackensack, N. J.	17,667	36,000.00
Freeport, Ill.	19,669	5,500.00
Lafayette, Ind.	22,486	7,762.00
East Cleveland,, Ohio ..	27,292	26,000.00
Elgin, Ill.	27,454	7,985.00

Local conditions, such as topography, climate, and the nature of the population, have considerable effect on the cost of collection, but they cannot account for the wide difference in costs of collection and disposal shown in the table above. The average cost for the cities listed above is $600 per 1,000 population and it is $500 per 1,000 population for all cities reporting. The figures submitted in many cases were not complete enough to give costs per ton of garbage collected, but assuming that the above cities had the average production of garbage, the cost would be approximately $3 per ton.

As regards disposal of garbage, 16 cities feed it to hogs, two in municipal piggeries; 15 cities incinerate, at least partially; and 8 cities dump the garbage either on land or in the water, but this method is usually reported as unsatisfactory.

Rubbish Disposal

The questionnaires, unfortunately, gave little information as to rubbish disposal, except that 14 cities make separate collections of garbage and rubbish, 10 collect rubbish with garbage, and 4 allow them to be mixed. Rubbish is usually dumped and used for fill, while 4 cities incinerate all rubbish. The collection periods vary greatly from weekly to the annual clean-up week, but average twice monthly.

Forward Steps in Municipal Affairs

City Managers

City Commissioners Carry Complaint Slips

Pontiac, Mich.—In order to make it easier for citizens to register complaints about conditions in Pontiac, complaints, instead of being received by one clerk or any one office, are now handled by the use of complaint books which are carried by the members of the City Commission and by the heads of all departments. The system consists of taking the complant in triplicate, the original being given to the foreman in whose jurisdiction the correction of the complaint would fall, one copy being retained by the person who received the complaint, and one copy sent to the City Manager's office to be used as a tracer in following it up.

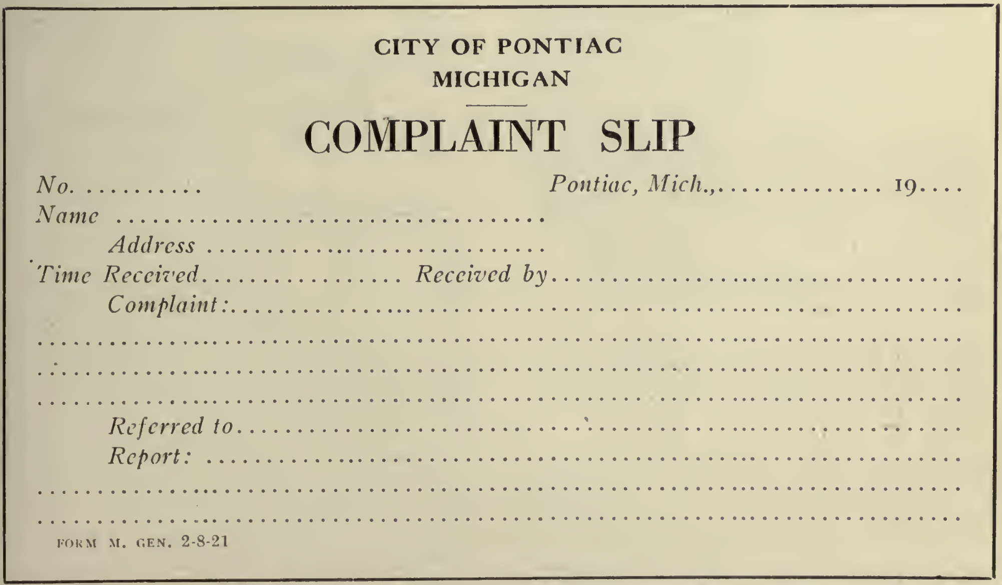
Inasmuch as service on maintenance consists, in general, of the regular program for the year, and the emergency work which cannot be foreseen at the time the regular program is laid out, it helps materially to have news of the needed emergency repairs come in the form of complaints, which should have priority. It was to this end that the complaint book was designed, and, at the present time it is functioning to the satisfaction of all concerned.

I. C. BROWER,
City Manager.

Mayors

Movies to Help Put Over Improvement Program

Philadelphia, Pa.—To further big public improvements, an innovation based upon the use of moving and stereopticon pictures has been introduced in Philadelphia. It is the result of concerted action on the part of Director Caven of the Public Works



CITY OF PONTIAC
MICHIGAN

COMPLAINT SLIP

No. .... *Pontiac, Mich.,*.............. 19....
Name ....
Address ....
Time Received................ *Received by*...................................
Complaint:...
....
....
....
Referred to...
Report: ....
....
....

FORM M. GEN. 2-8-21

FORM OF COMPLAINT SLIP WHICH HAS PROVEN EFFECTIVE IN PONTIAC, MICH.

Department, who has charge of most of the big public improvements, and City Council, which must be depended upon for help in the furtherance of these improvements, especially as to appropriations.

The innovation has two objects: First, to explain better than could possibly be done in words the progress in big public improvements, or the plans for proposed improvements of similar magnitude; secondly, to facilitate and justify appropriations.

Heretofore it has been the custom of the Director of Public Works to place major improvements before City Council through letters, and to explain the progress of improvements whenever it was necessary to obtain additional funds for their furtherance. While this was satisfactory to some extent and would afford the councilmen information as to the various improvements, it was thought that such matters could be more comprehensively presented to Council through the use of stereopticon or motion pictures. In the case of proposed improvements, the pictures would be limited to detail plans, site conditions and other details of the projected improvement.

Philadelphia at present has many big projects either started or under consideration, which involve the expenditure of millions. These include its great sewage disposal system, an improvement which, in itself, will involve a total expenditure of approximately $60,000,000 and a possible annual fixed charge of $5,000,000. Such an improvement, requiring appropriations from time to time, could not possibly be presented to City Council as well through letters or by discussion as by pictures.

The plan amounts to an illustrated lecture before the councilmen in their chamber on a particular improvement, the lecture to be given by the engineer in charge of the improvement exhibited. A start has been made by the Director of Public Works with the city's sewage disposal system now under way. It is the purpose of the Director to proceed in a similar way with every other big improvement within his jurisdiction.

The innovation has met with hearty commendation among engineers, especially those in the city service. They believe it will hasten improvements and at the same time give the councilmen an understanding of the character and extent of each problem.

RICHARD WEGLEIN,
President, City Council.

City Planting Day in St. Petersburg

St. Petersburg, Fla.—At the suggestion of the Woman's Town Improvement Association, and with the approval and cooperation of the Mayor, June 16 was set aside as City Planting Day. A series of letters in the daily papers stimulated the interest of citizens, who were requested to observe the day by planting something—flowering shrubs, trees or palms. Those who had well developed shrubs which required trimming were asked to bring the cuttings, thus obtained, for distribution to others who would plant and care for them.

The City Hall Auditorium was used for this collection and distribution, and a representative of the State Plant Board was present to inspect the plants collected and give advice as to their care. A goodly number of people applied for the cuttings, and over a thousand were given out. In addition to this free distribution, hundreds of people over the city planted independently, so we expect a great improvement in the general appearance of residential gardens.

It is purposed to hold another "Planting Day" in the fall, when people will be asked to put in seeds for winter flowers, as well as shrubs and trees; then next year, while our winter visitors are here, we will hold a real flower show, to give prominence to the civic beautification idea.

FRANK F. PULVER,
Mayor.

Finance Departments

Getting the Facts to the Public

Detroit, Mich.—The city of Detroit learned that it was spending considerable money needlessly in the preparation and publication of voluminous annual reports which received very little circulation and still less consideration by public officials or citizens. Recognizing the desirability of definitely informing the citizens of Detroit of the doings of their city government, the Mayor and the Common Council thought it advisable to prepare a condensed, simple, readable story of the accomplishments of the several departments of the city government, this report to receive wide distribution and to be used by public officials in making public addresses. It was our ambition to get the citizens of Detroit to inquire of the several departments what they are doing and why it is being done.

In order to get this simple, condensed report, extracts were prepared from the regular annual reports presented by the department heads to the Common Council on the 15th of January. These extracts were then submitted to the department heads for their approval or rejection. Certain general instructions were given to department heads so that we might have some continuity of thought and language. In order to limit the publication, a fixed number of pages was allotted to each department, with the request that the material be condensed to fit into the allotted space.

This was all accomplished, and a series of photographs, illustrative of each department, was to be inserted and then the language used in the reports was to be modified so as to be non-technical and easily read by a child of twelve years of age. The latter two features were sacrificed because of a desire to get the report out currently. These and other improvements will be made in the report for next year.

In all, 80,000 copies of the report were printed; 40,000 were distributed among the public school children; a copy was given to each child in the sixth grade and above; some 12,000 copies were distributed among parochial school children, and 20,000 copies were distributed among church clubs, improvement associations, social workers' organizations, fraternal organizations, etc. Reports were placed in the library for circulation, and many copies were taken by the members of the Common Council and distributed to groups addressed by them.

The Civic Department of the Board of Education planned a series of lectures using the report as a text-book. These lectures were conducted over a period of three months throughout the Detroit school system, with some good results.

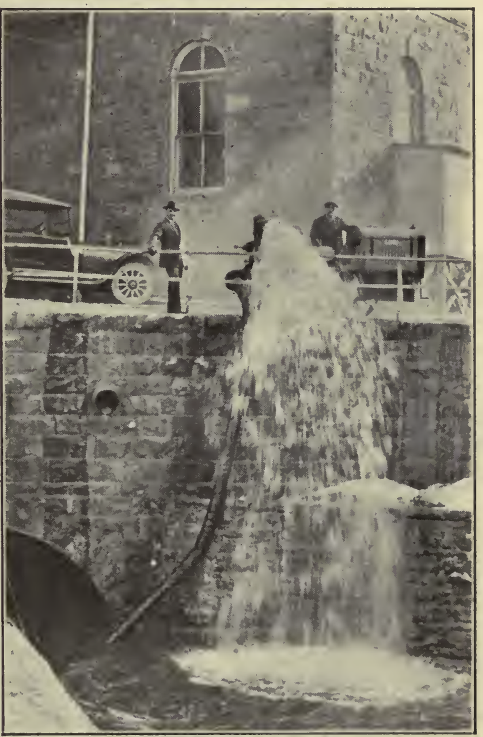
The remaining copies of the report will be distributed to the citizens at tax-paying time. It is our firm belief that in the course of two years the people of Detroit will have some intimate knowledge of the doings of their city government.

HENRY STEFFENS, JR.,
Controller.

Water Departments

Pumping Equipment for Dewatering Excavations

Denver, Colo.—The Denver Municipal Water Department has added a new departure in pumping equipment for dewatering excavations, cellars or any similar use. One unit of this equipment is a standard two ton G. M. C. motor, direct connected to a six-inch Byron Jackson Horizontal left hand centrifugal pump, with a capacity of 900 gallons per minute, and with a twelve-inch suction lift.



ONE OF DENVER'S DEWATERING OUTFITS
GMC motor direct connected to 6 inch Byron Jackson Horizontal left hand centrifugal pump can care for 900 gallons per minute

Two other engines have been similarly connected, and, as these may be easily moved, the Denver Water Commission uses them continuously except on very large jobs. These small units are direct connected to four-inch Byron Jackson Horizontal centrifugal pumps. These units each are capable of delivering 450 gallons per minute, against atmosphere, with a twelve-foot suction lift.

The motor and pump shafts are connected together with two thermoid universal discs, allowing sufficient flexibility for improper alignment. A steel frame, flanged at the top and bottom, is provided with supports to receive motor and pump, and sufficiently braced to make a rigid and substantial outfit.

To facilitate hauling or moving from place to place, large wheels are located near the center of gravity and blocked, when not in use. The motor can be regulated for speed, and quick opening valves regulate the discharge to suit. Priming pumps and necessary accessories are provided.

The three units were built in the Denver Municipal Water Plant's shops. At one time when it was necessary to cross the Platte River with the conduit of the Water Plant, the river was dammed and pumps used to clear the trench across the river.

BURTON LOWTHER,
Chief Engineer and General Superintendent, Municipal Water Plant.

Fire Departments

Fuel for Fire Fighters

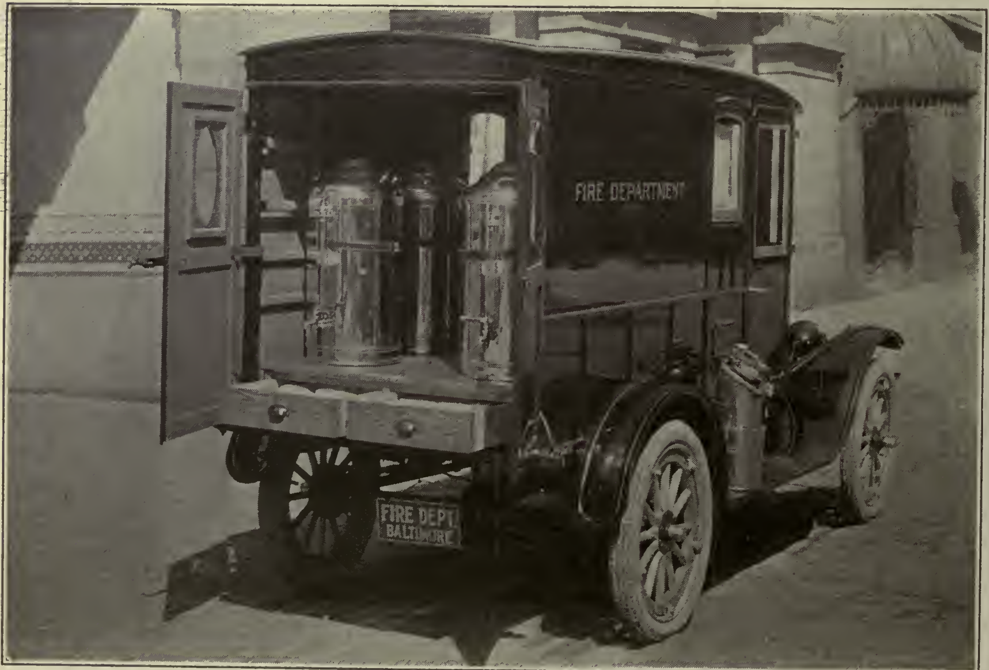
Baltimore, Md.—Realizing the importance of proper care and encouragement of firemen when on duty, the Fire Department of Baltimore has provided in the equipment of the department a coffee wagon for use on fire-ground to supply coffee, soup and sandwiches to members engaged in the extinguishment of large fires.

The wagon is mounted on a Ford chassis and is equipped with three five-gallon thermos cans for coffee, and one five-gallon can for soup, with necessary cups, soup bowls and appliances required on fire-ground for services of this nature.

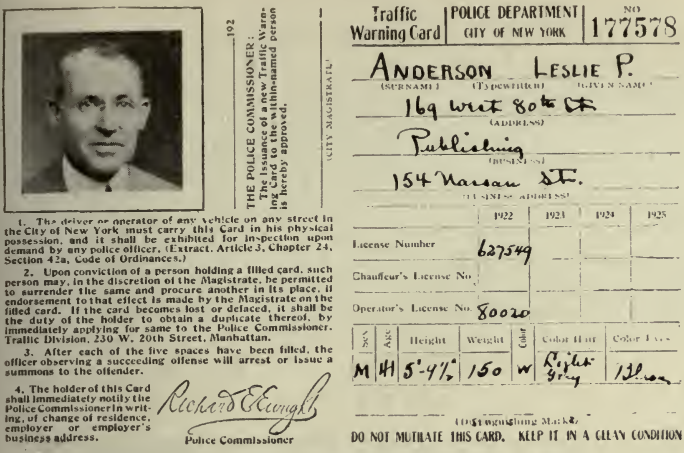
The thermos cans are of a special type and are guaranteed to keep the contents hot for a period of twenty-four hours.

The equipment was installed December 20, 1920, and has rendered most excellent service on a number of occasions. The cost of the apparatus and equipment was $1,200 complete.

AUGUST EMRICH,
Chief Engineer, Fire Department.



THE BALTIMORE FIRE·DEPARTMENT'S "COFFEE WAGON"



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THE POLICE COMMISSIONER:
The issuance of a new Traffic Warning Card to the within-named person is hereby approved.

(CITY MAGISTRATE)

1. The driver or operator of any vehicle on any street in the City of New York must carry this Card in his physical possession, and it shall be exhibited for inspection upon demand by any police officer. (Extract, Article 3, Chapter 24, Section 42a, Code of Ordinances.)

2. Upon conviction of a person holding a filled card, such person may, in the discretion of the Magistrate, be permitted to surrender the same and procure another in its place, if endorsement to that effect is made by the Magistrate on the filled card. If the card becomes lost or defaced, it shall be the duty of the holder to obtain a duplicate thereof, by immediately applying for same to the Police Commissioner, Traffic Division, 230 W. 20th Street, Manhattan.

3. After each of the five spaces have been filled, the officer observing a succeeding offense will arrest or issue a summons to the offender.

4. The holder of this Card shall immediately notify the Police Commissioner in writing, of change of residence, employer or employer's business address.

Richard E. Enright
Police Commissioner

Traffic Warning Card | POLICE DEPARTMENT CITY OF NEW YORK | NO 177578

ANDERSON LESLIE P.
(SURNAME) (Typewritten) (GIVEN NAME)

169 West 80th St.
(ADDRESS)

Publishing
(BUSINESS)

154 Nassau St.
(BUSINESS ADDRESS)

	1922	1923	1924	1925
License Number	627549			
Chauffeur's License No.				
Operator's License No.	80020			

Sex	Age	Height	Weight	Color	Color Hair	Color Eyes
M	41	5'-4½"	150	W	Light gray	Blue

(Distinguishing Marks)

DO NOT MUTILATE THIS CARD. KEEP IT IN A CLEAN CONDITION

NEW YORK'S NEW TRAFFIC WARNING CARD

Police Departments

New Yorkers Must Carry Traffic Violation Cards

NEW YORK, N. Y.—As a means of controlling minor traffic violations, the Board of Aldermen of New York, at the suggestion of the Police Department, recently passed an ordinance requiring the issuance of traffic warning cards to drivers and operators of vehicles.

In substance, this ordinance requires the driver or operator of any horse-drawn or motor vehicles upon any street, parkway, park drive, park street or bridge to procure annually and carry in his physical possession a card known as a traffic warning card issued to him by the Police Department. Each applicant for such card must file two recent photographs of himself of such a size that one may easily be so attached to the card that it cannot be removed and another photograph substituted without detection. Upon the card at the time of its issuance shall be arranged five blank spaces and there shall be recorded a description of the applicant as to number of operator's or chauffeur's license, residence, employment, sex, age, height, weight, color of hair and eyes, and any other distinguishing features, together with the signature of the applicant. Such driver or operator shall upon demand of any police officer exhibit his card.

Upon the apprehension of any offender against the minor traffic regulations or ordinances prescribed, the officer must note upon the card in the space provided for such purpose the date and nature of such offense, together with his shield number, and this notation may, in the discretion of the officer and with the consent of the offender, be in lieu of an arrest or an issuance of summons. The contents of the notation shall be immediately reported by the officer to the police commissioner and by him to the traffic courts, where a record shall be kept of them. After making such a notation upon each of the five spaces, the officer shall arrest or issue a summons to the offender for the next succeeding offense. Upon the conviction of a person holding a card thus filled, such person may, in the discretion of the magistrate, be required to surrender it and to procure another in its place. The ordinance does not apply to non-residents of the city, but any such non-resident may at his option procure such a card and thereby become subject to its provisions. The spaces for notations are on the back of the card.

JOHN A. HARRISS,
Special Deputy Police Commissioner.

A COURTEOUS REQUEST THAT YIELDS RESULTS

Park Departments

Portland's Unemployed Made This Lake

Portland, Ore.—Picturesque Laurelhurst Lake was once a marshy fen, unattractive, and difficult to care for. During the depression of the winter of 1916, unemployed men, working under the direction of the Bureau of Parks, achieved the building of the lake within the season.

UNEMPLOYED MEN MADE THIS LAKE IN LAURELHURST PARK, PORTLAND, O.

The body of water covers nearly 3 acres, is about 800 feet long and 300 feet wide at its greatest width, and has a shore line of 1,700 feet. It ranges in depth from 2 to 9 feet and is kept filled by springs. The outlet is directly connected with a large trunk sewer by a specially constructed subterranean sluiceway with gates, making it possible to drain the entire lake when necessary.

Originally the area consisted of a mosquito-breeding swamp, and the logical development was to transform it into an attractive lake by clearing and deepening. A small-gage track was laid between the park and the neighboring lowlands, and men were put to work excavating by hand and were paid on the basis of the amount of material moved.

When the lake was built, the landscape work was started. This included planting aquatic plants in the lake and framing it in grassy shores with shrubbery plantings and groups of trees to further beautify the scene. The first year showed that the growing of water-plants was not practicable, for the growth was so luxurious that the fen condition would have returned shortly. Wild ducks, geese and swans were put into the lake to care for the vegetation, and they performed this duty with great efficiency. Not only nave the water-fowl kept the lake free of excessive plant growth, but they have settled quite comfortably in their park home and are a source of unceasing pleasure to children and grown-ups. The Bureau of Parks provides feed for the birds in the winter, but picnickers in the summer season always find extra crumbs for the fowls, and the Bureau needs to supply but little food, so numerous are the friends of the birds.

Laurelhurst Lake provides excellent skating when the winters are cold. Last season thousands of people enjoyed skating

A FEW OF THE WILD DUCKS THAT EACH SEPTEMBER RETURN TO LAKE MERRITT, OAKLAND, CALIF.

for a long period. No other place in the city offers such an accessible skating-rink and it is sufficiently large to care for crowds.

As a means for providing employment for the city's idle and at the same time providing a beauty-spot in the park, Portland regards this as a splendid investment. The method has since been used for other special work in the parks, but none has yielded greater return in pleasure and satisfaction to the citizens.

FLORENCE HOLMES,
Landscape Architect, Bureau of Parks.

Recreation Departments

Why the Ducks Come to Oakland

OAKLAND, CALIF.—Most cities have some point of interest that distingush them from other cities. But only in Oakland, California, can wild fowl be found that are so tamed by human kindness that they return year by year to their winter refuge for shelter and protection.

In honor of the return of the ducks to Lake Merritt, in the heart of Oakland, there was a Wild Duck Pageant presented in January, 1922, by over 1,000 school children, under the direction of the Recreation Department, and sponsored by the Chamber of Commerce of Oakland.

The first flight of the wild ducks into Lake Merritt takes place regularly on September 30 of each year. The old birds return, bringing with them the younger ducks, until, when the New Year arrives, there are thousands of them on the Lake and the lawns of Lakeside Park.

The January pageant opened with Miss Oakland and the Spirit of the Lake coming forth to give New Year's greetng to the city's winter guests, the wild ducks. Mr. Canvasback Mallard, President of the Duck Colony, then arrived to represent the ducks, accepted the greeting, and thanked Oakland for protection, food and climate.

Miss Oakland, attended by the children from various playgrounds, then joined in the dance of 1922. Part II, showing that no scarecrows and no hunting were allowed, was portrayed by children from other playgrounds, all in appropriate costume. Then a Piper arrived, scattering the grain as he gave "the first call for dinner." He was next joined by the Farmers and Farmerettes, also scattering grain. Then followed dances by the Sunbeams, Bees, Butterflies, Poppies and Poinsettias, all beautifully costumed.

Part III was "Farewell Until Fall." The Frogs then escorted Mr. Mallard back to the Lake, whereupon all left, waving farewell.

The Recreation Department expects the ducks again on September 30, and is already making plans for next year's festival.

JAY B. NASH,
Superintendent of Recreation.

Wise is the official who, having visioned his city as it ought to be, dares take the essential steps to make that dream come true, for his name shall live when lesser men have been forgotten.

The Administration of Municipal Water-Works

A Commission Separated from the Ordinary Government Departments Should Completely Control the Department

By Alfred R. Hathaway

Registrar and Clerk, Board of Water Commissioners, Springfield, Mass.

IN Springfield, Mass., it is the opinion of experienced authorities that the best name for the public water utility is "Municipal Water-Works," instead of "Water Department," as it is strictly a public service enterprise or public utility which should be administered entirely separate from the ordinary city governmental departments that are supported by tax levy. It is entirely under the charge of the Board of Water Commissioners, consisting of two citizens who are elected in joint convention of both branches of the City Council, one each year for a term of two years, and the Mayor of the city, ex-officio. These three men constitute the Board. No salary is paid to the two citizens, nor to the Mayor, other than his regular salary as Mayor. Outside the election of a water commissioner annually, the City Council does not control the action of the Water Board. The Water Commissioner whose term expires in any year is usually reelected, so that Springfield has had for many years long and valuable service from prominent citizens, who have given of their time and experience freely. Occasionally the ever-present political element in the City Council makes attempts to put in some politician, against the expression of public opinion, but has not yet succeeded to any extent.

Under the Board and its control, and annually elected by the Board, are the two subdivisions specified by city ordinance—the Water Registrar's Division (covering the office, accounting and inspection), and the Superintendent's Division (including property and plant, as well as supply and distribution work). The latter division has also been subdivided by the Board into the Chief Engineer's Division (covering supply—property and work), and the Superintendent's Division (distribution—property and work). These three subdivisions seem to be logical ones for any organization, but, in the writer's opinion, a more permanent administration and policy along proper business lines would be insured by a board of, say, five commissioners, elected by the people, one each year for a five-year term, with a small salary attached (a salary not large enough to attract politicians), and not to include the Mayor, as at present, as he is an ever-changing official, with all the interests of the city to study during his usual short term of office.

The business administration, rather than the political, is the only proper form of administration for such municipally-owned and operated public utilities, and the meat of the criticism heard in certain directions against municipal ownership of such utilities is found in the too-frequent operation and control of these utilities by the untrustworthy political element, which wants to have a hand in the management for its own selfish purposes.

The people in general should awaken to such dangers, and, when they study into the matter, they will insist on a proper business administration along the same fundamental lines on which such utilities are now managed and operated by private ownership. The privately owned and operated utilities of the country are under control of state utility commissions, which are standing between the people served and the utilities serving, and each year are handing down valuable opinions regarding matters of administration, accounting, service and rates, etc.

The writer is leaning more and more towards the taking away from local city councils, or other political bodies, of control over water-works, gas works, electric light works, etc., when owned and operated by towns and municipalities, and placing such control under a properly appointed public utility commission, for better and continued service and administration in the interests of the public which they are to serve.

What Shall We Do with Our Old Rough Pavements?

By Harlan H. Edwards

City Engineer, Danville, Ill.

THE problem of resurfacing pavements is one which is troubling many cities to-day. It is one which has become more acute because of the lack of adequate maintenance of pavements during the war period and consequently is now taxing the city treasuries severely. Brick pavements were the chief ones laid in the late nineteenth and early twentieth centuries, and are consequently the principal pavements needing attention now. This is due mainly to the effect of our heavy trucks in compacting the old foundations, to the increasingly heavy loads hauled in steel-tired wagons, and to the slipshod method employed in the replacement of the pavements over old sewer trenches.

EXAMPLES OF STREETS IN NEED OF REPAIR

1. A brick street that can only be put in good condition by resurfacing. 2. Old brick pavement with poor foundation which makes resurfacing impossible. 3. The thirty years of perfect service of this brick pavement marred by poor repairs after excavations

There are many types of pavement other than brick which are also in need of repair, but their improvement usually requires the mere replacement of the worn or defective wearing surfaces, since their foundations are mostly of concrete. Asphalt or other bituminous top pavements are characteristic of this class, and their replacement is simple. Owing to the many schemes advanced for the smoothing of our brick pavements, however, much more consideration should be given them in order that the best and most economical method may be selected for each particular street.

The term "resurfacing" when applied to pavements must not be construed to mean merely the placing of a new wearing surface on top of the old, but, in the true sense of the word, it must include the replacement of the old top course with a new one of similar character. In general, where the old foundations are adequate and thoroughly compacted, resurfacing may be successfully done. Where, however, the foundation is subject to saturation by springs or contains "seepy" places, or is not heavy enough to hold up our present-day motor trucks, resurfacing cannot be done without first strengthening the pavement. This virtually means its entire rebuilding.

As a rule, these old-brick pavements were laid on foundations either of compacted crushed stone or gravel or one course of brick laid flat on a few inches of sand or gravel and rolled thoroughly, since concrete was little known and less used for pavements at that time. Years of increasingly heavy traffic have thoroughly compacted these old bases. At the same time, years of installation and repair of sewer, water and gas pipes have tended to destroy what original smoothness of surface there was, until now little more than a series of ruts or bumps remain. A few of the old pavements have escaped the destructive action of the excavator's pick and shovel and remain smooth and durable, samples of what the other pavements might have been had they not been cut up and "replaced" in the old haphazard way. Still others, laid of the better grade of brick, also have retained their original smoothness, but those which were put down of less durable brick have worn away until little remains of the old surface.

The recent experience of one of our small Illinois cities in resurfacing pavements may be taken as characteristic of the present methods of dealing with this problem. As in many other cities, the serviceability of a number of its older streets was reduced by bumpy, uneven pavements. The construction of sewers, etc., had ruined some of the streets, and heavy traffic had ground out the wearing surfaces of others. All of them called for immediate attention. The methods of handling these various jobs are worthy of note.

Repair by Relaying Brick

One was in the wholesale district where the pavement had been nearly destroyed by the installation of a large and deep storm-water sewer. The original pavement was of two-course brick construction, the top layer of which after many years of good service had become badly worn and was loosening in spots. This was removed completely, and the lower course of brick cleaned off. A minimum of 3 inches of strong concrete was laid upon this, leveling up the pavement as well as giving it added strength. A sand cushion ¾-inch thick was then spread over this, upon which the 4-inch straight wire-cut brick pavement was laid, and the joints between the bricks were filled with asphalt. This provided a very satisfactory new wearing surface at a cost of $2.98 per square yard exclusive of excavation, materially less than the cost of a new pavement. This was done in 1919.

Another old-brick pavement, which had been subjected to extremely heavy teaming from the brick-yards and coal mines, was resurfaced with 3-inch vertical-fiber brick, asphalt filler, in a somewhat similar manner. In this case the foundation consisted of a 5-inch natural cement concrete base, laid upon a fairly well-drained subgrade. The combined action of steel-tired wagon traffic and the expansive action of heat and cold upon a poorly grouted brick surface, practically ruined the top course, making renewal imperative. The old brick top and the sand cushion were therefore removed, the old base cleaned off, and a new cement and sand bed spread upon it, having an average thickness of 2½ inches and composed of 1 part portland cement to 5 parts of sand thoroughly mixed. The 3-inch brick were at once laid flat upon this bed, rolled and wet down in order to cause the cement in the cement and sand bed to harden or "set up." After four or five days, when the brick had dried out, the asphalt filler was applied and the street opened to traffic one block at a time. This provided a pavement stronger, better and smoother than it was originally. The cost was $2.80 per square yard in 1921, including the excavation and removal of all the old brick and the sand cushion.

It is seen by the foregoing instances that the old worn pavements can be completely resurfaced and strengthened at a cost materially less than that of an entirely new pavement without raising the level of the street. It is a fact, however, that many of our old brick streets which were laid years ago with good hard-burned brick are not worn out, but have merely become uneven from the compaction and settlement of their foundations. Such streets can be made smooth by relaying, at a cost which should not exceed

$1.50 per square yard. In doing this, the old brick are taken up and cleaned off. The old sand cushion is then raked over, new sand added, and the entire width cut off to the correct crown with the proper template, thus providing a suitable bed upon which the brick can be relaid. The old brick are then placed upon this bed bottom side up, thereby exposing the originally concealed square-edged surface to the traffic. Broken brick are replaced with new ones, usually amounting to about 10 per cent or less of total yardage. After the brick are thoroughly rolled with a 5-ton steam roller, the spaces between the brick are filled with an asphalt filler and the entire surface is sprinkled with coarse sand. A pavement laid as described will wear just as long as when originally laid, and possesses a surface no different in smoothness from that of an entirely new street.

Such work as this was recently done at Meridian, Miss., for the contract price of 65 cents per square yard complete.

STUDY THE JOB

There is a place for every type of durable pavement. Some kinds of pavement cost more for certain jobs than others. For economy's sake we should be guided in our selection of a type of pavement by the conditions at hand and not by personal preferences or prejudices.

Repair with New Surface

In contrast to the foregoing methods of replacing or relaying the wearing surface of the old brick streets, in which the same surface level is maintained, we have the method of placing another wearing surface on top of the old without disturbing the old pavement at all. Sheet asphalt or asphaltic concrete is used for this type of pavement, and when properly used produces a smooth surface which may be expected to last as long as the same material on a new street. Sheet asphalt pavement composed of a 2-inch layer of sheet asphalt laid on a 1-inch layer of asphalt, sand, and gravel "binder" was used in smoothing up the old brick pavements on several streets in the retail business district and on some of the main residence streets of this Illinois city. The character of these old pavements which were resurfaced varied from a two-course brick on sand to a one-course brick on stone or gravel. All were about thirty years old and had given excellent service.

In handling this kind of work, new gutter-levels were established by the engineer about 3 inches above the old pavement grade, and were marked by chisel upon the curb at intervals of about 20 feet. A chalk-line was then snapped upon the side of the curb, using these marks as guides, and gave the new gutter-level very plainly for the guidance of the asphalt layers.

Before the asphalt was applied, the old brick street was thoroughly swept; all dirt, etc., was removed from the joints to a depth of about ½-inch, and a sprinkle coat of asphaltic cement applied. Upon this the 1-inch binder course of asphaltic cement, sand and gravel was laid and rolled, followed by the 2-inch wearing course composed of fine sand, stone dust and asphalt, all rolled thoroughly to a smooth, even surface free from waves and uneven spots. This provided a pavement surface which was smooth and durable at $2.47 per square yard in 1921, not including any binder used in excess of a thickness of 1 inch after rolling. For all "extra" binder used to fill holes or depressions, an additional price of $12 per ton was paid.

With this method of resurfacing, however, the price paid for the wearing surface is not the total cost. On account of the higher pavement level and the inevitable reduction in curb height, additional storm-water sewers must be provided, with inlets placed at frequent intervals to remove the water from the street. Pavements at intersecting streets and alleys must be relaid for at least 10 feet back and sloped to meet the new grade 3 inches above the old, and at intersections where water drains upon the resurfaced street, new inlets must be provided, or the entire turnout relaid to a new and lower grade, if this is possible. All these items cost money and must be taken into account when planning such improvements.

It will be seen, therefore, that in estimating the cost of such projects, all things entering into the final cost must be considered. In many cases the type of resurfacing economically and suitably will depend upon the topographical location of the street, the character of its traffic, the character and stability of the old pavement, and the original curb height.

On one of the streets resurfaced with asphalt recently the cost of the asphalt work was $42,000 or $2.47 per square yard, and the cost of the incidental work, exclusive of non-essentials, was $20,000, or an extra cost of about $1.20 per square yard of pavement laid. A new brick surface could have probably been laid at less cost on this street and the original grade maintained, while on the other hand an asphalt resurfacing job might have been cheaper on a street having little or no surface drainage entering upon it from cross-streets.

Where street car tracks are existing on a street to be improved by resurfacing, it is highly desirable to maintain the original grade, for any change carries with it an enormous expense compared to benefits derived, for raising the entire track structure.

Replacement of openings made in bituminous streets in our small cities that are unable to support a permanent asphalt mixing plant are quite a problem to the untrained street repairmen. Any non-bituminous pavement, on the other hand, requires little skill in its repair or replacement, and such repairs should be accomplished at a moderate cost. Where a permanent asphalt mixing plant exists, or in cities where the yardage of bituminous pavements is sufficiently great to warrant the giving of special attention to their replacement, the cost of such work should not prove excessive.

Dragging the Roads—Method Used in Ontario

EXPERIENCE in the maintenance of the provincial highways of Ontario, Canada, and certain county road systems has demonstrated that the dragging of earth and gravel roads is of the greatest advantage. Were townships to establish adequate organizations for dragging their gravel roads, a wonderful improvement would result generally in road systems. A steel drag with three blades, known as a "road plane," is extremely effective in keeping a gravel road in the best possible condition. A light coating of moderately fine sand should be added annually, if possible, to keep a floating surface over the gravel. Without this floating layer of gravel, an inch or so in depth, there is nothing for the plane to work with to keep depressions and holes filled. Care must also be taken not to cover the gravel with earth or clay by drawing the latter from the edges of the road with the plane.

More than half the roads of the province of Ontario are graveled. Systematic dragging of these roads greatly improves the road conditions, such as no other method would produce. Dragging can also be extended to earth roads with splendid results. But this plan of maintenance is not applicable to stone roads unless they are first covered with a light layer of suitable clean gravel or very fine crushed stone.

Roads Important in the Development of the Philippines

ACCORDING to John Haeseler, writing on the Philippines in the *Youth's Companion*, "one of the most important factors in hastening progress in the Philippines has been the roads. The Americans established a great program of road building and carried it forward for many years, until now the finest system of roads in the Orient connects most of the important points. In Luzon it is possible to go from the palm-fringed coastal plains up into the pine-clad mountains of the central part by one of the most picturesque routes imaginable. . . .

"Under the rule of Spain the ordinary Philippino spent his life in laboring as a peon on one of the big haciendas; or, if he was independent, he cultivated his acre or two of land and raised enough food to feed his family. . . . There were a few poor roads and some wretched inter-island steamers or sailing boats. . . .

"The life of almost every inhabitant of the islands has changed since the Americans took control of them. The villages that at first were isolated communities, situated perhaps in fever-breeding swamps, are now on the main highways, and some of them are prosperous seaports. Truck lines and stage lines came with the building of the roads; the development of the archipelago did not have to await the railways."

Novel Plan Finances New White Way

Success Attends Eight Years' Effort to Secure Adequate Lighting in Bartow, Fla.

THE NEW LIGHTING SYSTEM AS SEEN BY DAY

IN 1914, Bartow, Fla., began a campaign for the installation of a modern white way. This city of approximately 5,000 population is the county-seat of Polk County, the center of the phosphate mining district, and the hub of about 350 miles of asphalt paving. It owns its public utilities, which were described in an article, "Growth of the Municipal Electric Plant in Bartow, Florida," by D. E. Bivins, Superintendent of Public Utilities, in the July, 1921, issue of The American City.

When an attempt was made to put over a bond issue for the white way, taxpayers were alarmed at the expense, and the measure was defeated. Following this, the local Board of Trade appointed various committees to devise other ways of raising money for this necessary improvement. Each of these committees determined that Bartow should have an ornamental lighting system, and made earnest efforts to secure subscriptions on the customary front-foot basis. As is commonly experienced, property owners could not be induced to pledge a sufficient amount of money to insure the cost of the installation. The accompanying cost of assessments, always irksome in municipalities and particularly so when times are hard, was a bugbear in the eyes of property owners and municipal officials. Finally, after believing that they had tried every reasonable method of obtaining the new lighting system for Bartow, the Board of Trade decided to abandon the project.

New Financing Scheme Put Forward

D. E. Bivins, Superintendent of the City Light and Water Plant, and Ellis Gibson, City Tax Collector, conceived a plan to finance the scheme by securing subscriptions from merchants and property owners occupying the area to be lighted, on the cost per pole, rather than the cost per front foot.

The average man does not like to be assessed, but when a merchant is asked if he would like to give a pole to beautify his city, he is not merely willing but eager to contribute his quota to the amount necessary. The scheme as outlined eliminated all costs of bond issues, assessments or other legal procedures and made the city richer by a well-appointed and installed ornamental lighting system, without laying upon it any of the burdens incident to acquiring that system. It enabled the people who were willing, to give toward lights for the purpose of business building, thus directing money into their own pockets, whether they owned the property they occupied or merely rented it. It made it possible for prosperous property owners to contribute in proportion to their means, and for the less successful ones to give according to their ability without feeling hardship. In fact, in the case of one property owner who was unable to give anything, a

EQUALLY GOOD VISIBILITY AT NIGHT ON THE SAME STREET public-spirited woman owning residential property in the section to be lighted stepped into the breach and contributed in his stead.

The entire cost of installing the lighting system approximated $10,000. It is interesting to note that within six hours from the time Mr. Bivins and Mr. Gibson proposed their scheme of raising money for this installation, 70 subscriptions covering the cost of 70 installations of poles had been obtained. The installation consists of steel poles 30 feet high on which are mounted 400-candle-power, 6.6-ampere incandescent lights enclosed in attractive globes with glass canopies. The type of pole chosen is both useful and ornamental. Bartow has no alleys or unimportant side streets, so that the distribution and feed lines had to be carried on poles adjacent to the building fronts. The type of lighting unit chosen is particularly efficient, giving an even distribution of light.

Painting Structural Steel Bridges Saves Money

THE life of many steel highway bridges is materially shortened because of infrequent and improper painting, according to the U. S. Bureau of Public Roads. Each year a considerable amount of money is expended for the replacement of rusty bridge members which could have been avoided if they had been kept painted. More serious than the waste of money is the positive danger to the public which results from such carelessness, due to the weakening of some hidden part which may cause the collapse of the whole bridge. Officials of the Bureau of Public Roads urge that all steel bridges be inspected at least once each year and repainted at the first sign of rusting. Normally repainting is required at periods of from two to five years, depending on the climate. A suitable paint should be used, and if there is uncertainty as to the suitability of any particular paint, information should be requested from the State Highway Department. It is a mistake to repaint without properly cleaning the metal from all dirt, rust, loose paint and blisters. Usually the places hardest to reach are the ones that receive the least attention, so carelessness breeds deterioration.

The Operation of Chinese Fire Departments

NO Chinese fire department is municipally owned, but is operated entirely by the people of a community on funds subscribed by residents without solicitation, according to Y. Q. Hsu, Chairman of the Board of Maintenance of the Shanghai Fire Department, who recently came to San Francisco to attend the convention of the International Association of Fire Engineers.

In Shanghai, which has the most modern department in the Orient at the present time, the department headquarters are in the center of the city and four divisions, one in each section of the city, which do the actual fire fighting. Each division has an officer in charge and six volunteer officers, all serving without pay, and 20 firemen who are paid a stated salary and are kept on duty constantly. Only motor equipment is used in the Shanghai Department. Each of the four stations has three motor trucks, including a hose wagon, ladder wagon and an automatic pump. Differing from local departments, the Chinese use no chemicals in fighting fires, doing all their work with water. The systems of giving alarms and laying hose lines are the same as used in this country.

The present organization, except the motor equipment, is about 15 years old in Shanghai. Before that time fire fighting was done by about 35 small brigades distributed throughout the city, and none adequately equipped.

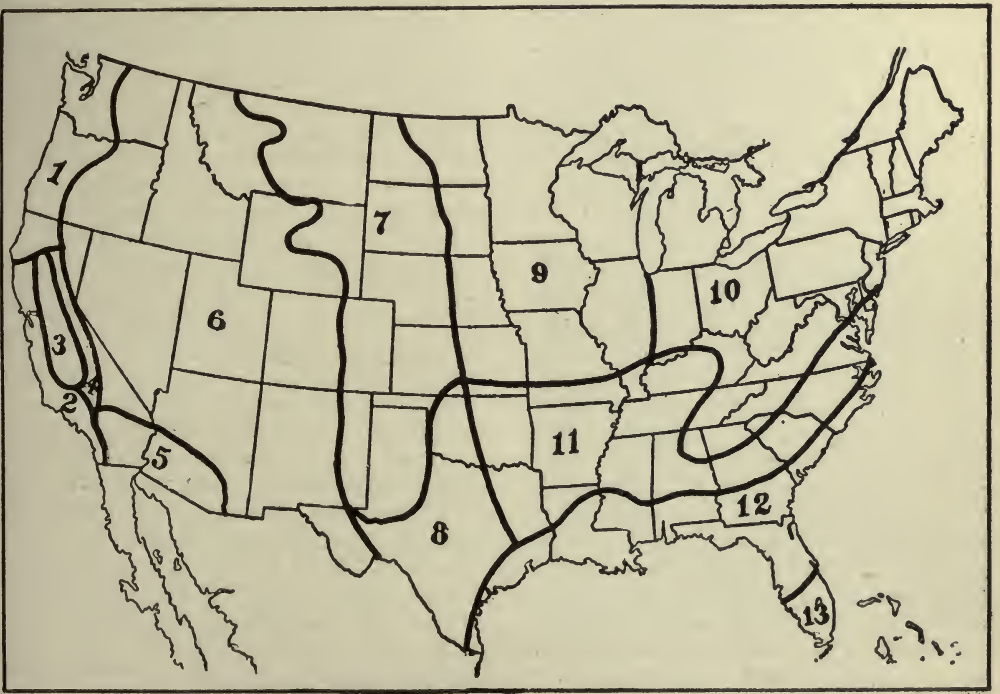
Insuring Satisfaction in Tree Planting

The United States Department of Agriculture Has Arbitrarily Divided the Country into Regions of Essentially Similiar Conditions for Tree Growth

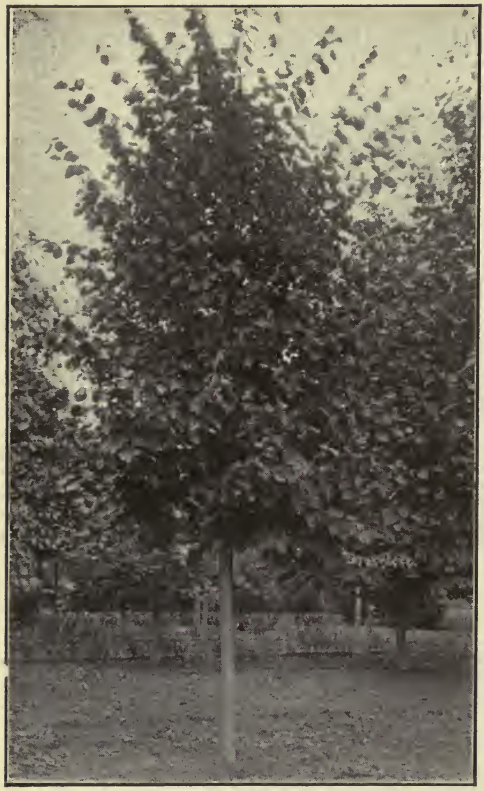
TO simplify the choice of the kinds of trees likely to prove satisfactory for street planting in towns and cities in the United States, the United States Department of Agriculture has prepared an outline map, reproduced herewith, which should prove very helpful in solving tree planting problems. Each division represents an area with similar growing conditions.

Region 1 comprises the northern Pacific coast, east of the Cascade Mountains, including the western third of Washington and Oregon and a portion of Northern California. The trees native to western Europe are adapted to this region, as the climatic conditions are quite comparable. Most of our American trees also succeed here. Desirable varieties for street planting in this region are the Oregon, Norway, sycamore and sugar maples, California walnut, tulip, European linden, basswood, sycamore, London plane, white and European ashes, English and American elms, English red and pin oaks, ginkgo, and black locust.

Region 2 is that portion of California lying between the Sacramento and San Joaquin Valleys and the Pacific Ocean. Many varieties of trees will succeed here if given sufficient water. Because of the lack of water, unless specially irrigated, the more drought-resistant trees should be used. Deciduous trees useful for this region are the London plane, California and common sycamore, English, Huntingdon and American elms, Oregon, Norway, sycamore and English maples, white, green and European ashes, red, English and pin oaks, European lindens, basswood, California walnut, honey and black locusts, horsechestnut, Albizzia, and Japanese varnish tree or Sterculia. Evergreen trees which will succeed in Region 2 are the Eucalyp-



REGIONS OF LIKE TREE-GROWING CONDITIONS IN THE UNITED STATES



LINDENS

tus in variety, acacias, rubber, magnolia, California live-oak, Victorian and poplar-leaved bottle trees, and in the southern portions of California pepper, silk oak, and Jacaranda. Palms are much planted, but do not make good street trees except where a formal effect instead of shade is desired.

Region 3 comprises the Sacramento and San Joaquin Valleys. Deciduous trees for this region are the California walnut, London plane, California and common sycamores, Oregon, Norway and sycamore maples, white, European and green ashes, red, English, valley and pin oaks, European linden, basswood, English and Huntingdon elms, honey locust, and horse-chestnut. Chinaberries and Texas umbrellas are much planted in these valleys, but are not good street trees. Olives and palms are suitable only for formal effects. Eucalipti are satisfactory, but are apt to make trouble with defective sewers. Acacias grow especially well, except in the extreme northern part of this region.

Region 4 includes the country from the Sacramento and San Joaquin Valleys to the crest of the Sierra Nevada Mountains. It varies in elevation and correspondingly in temperature and the amount of available moisture. Where the moisture is sufficient, the deciduous trees recommended for Region 3, except the valley oak and California sycamore, may be used. Where there is less moisture, the thornless honey locust, black locust, green ash, hackberry, poplars, ash-leaved maple, and American elm if it can be watered the first few years, may be planted. In the warmer sections the chinaberry and Texas umbrella may be used.

Region 5 comprises the hot, semi-arid country of southern California and southwestern Arizona, which is dependent on irrigation. The best deciduous trees for this region are those suggested for the dryer portions in Region 4. With ample irrigation, the deciduous trees recommended for Region 3 might grow. Among the evergreens, the Texas palmetto, the Parkinsonia and the Washingtonia and some other palms can be used where other trees do not succeed. The red and desert gums may be used also in the drier regions. With ample irrigation, the evergreens suggested for Region 2 should succeed.

Region 6 is the intermountain section, extending from the crest of the Cascade and Sierra Nevada Mountains eastward to the eastern base of the Rocky Mountains. The region includes great variations in growing conditions, often in very short distances. As a whole it is semi-arid, and in most places trees can hardly be expected to thrive without irrigation, although in some of the mountain valleys and on some of the mountain slopes almost ideal conditions for tree growth exist.

In the drier parts of the region those deciduous trees that are weeds under more congenial conditions can be grown. Those which can be planted with the greatest hope of success are the thornless honey locust, black locust, green ash, hackberry, and where the others do not succeed, the poplars and ash-leaved maples. If it can be watered for a few years, the American elm usually can be grown, and in the southern half of the region the Mississippi hackberry will probably succeed. Near the southern border, on lower elevations, the chinaberry and Texas umbrella can also be planted. In the locations most favored naturally or where irrigation is possible, the trees suggested for Region 9 can be used. Evergreens that may be used for the drier portions of the southern part of Region 6 are the Parkinsonia and the Texas palmetto. Native trees should be sought and tried.

Region 7 is the northern and central parts of the Great Plains area from the foot of the Rocky Mountains at about the 5,000-foot contour line east to the 98th meridian. It is rather uniform in general conditions, the character of the soil giving no wide divergence, and the elevation increasing gradually from south to north and from east to west. The rainfall gradually increases from west to east, until at about the 98th meridian the conditions are more favorable for tree growth. The trees to be relied on are the thornless honey locust, common hackberry, black locust, green ash, ash-leaved maple, poplars, and Chinese elm. The American elm and the silver maple will frequently prove satisfactory if they can be watered the first few years after transplanting. The mossy-cup oak is another tree worth testing in a small way, as it is native a little east of the 98th meridian. The basswood and Norway maple would probably succeed if supplied with plenty of water.

Region 8 is the southern part of the Great Plains. In addition to the deciduous trees recommended for the northern Great Plains, Region 7, the Mississippi hackberry, Texas umbrella, and chinaberry may be successfully grown. Evergreen trees which may be used in this region are the Texas palmetto and Parkinsonia.

Region 9 is the upper Mississippi Valley, including the area eastward from that already considered to Lake Michigan and south to southern Kansas. It is more favorable to tree growth than Regions 6 and 7. The American elm, red, pin, mossy-cup and other native oaks, white ash, sycamore, basswood and Norway and sugar maples should succeed in this area.

Region 10 includes the northeastern part of the country, from eastern Illinois to the Atlantic Ocean, and extends southward to the Appalachian Mountains. It is most favorable for tree growth. The best trees for street planting in this region are the red and pin oaks, London plane, sycamore, the staminate form of the ginkgo, basswood, tulip, Norway maple, white ash, thornless honey locust, American elm, and in the southern portion of the region on light land, the sweet gum. The red and sugar maples are among the best trees for suburban conditions. The hackberry will grow, but should be discarded in favor of better varieties. The mossy-cup and chestnut oaks are worthy of trial on gravelly soils in the suburbs.

Region 11 includes the lower Mississippi Valley and the country east of the southern Appalachian Mountains, extending from the light lands near the south Atlantic and Gulf coasts to the northern limits of the distinctly southern flora. The typical street trees of this region are the willow oak and water oak, the former a valuable street tree, the latter good when young, but comparatively short-lived with no advantages over the willow oak. Other good trees are the red, Spanish, laurel, Darlington, and pin oaks, tulip, sweet gum, American elm, red and Norway maples and the ginkgo.

SYCAMORE

Region 12 is the land near the coast from Wilmington, N.C., to the Mexican border, exclusive of the southern part of Florida. Good deciduous trees for this region are the willow, laurel, Darlington and Spanish oaks, tulip, sweet gum, sycamore, London plane, American elm, and the staminate form of the ginkgo. The honey locust, red or scarlet maple, Norway maple and hackberry are not so good. The live-oak is the characteristic tree of this region and is the pride of the cities that have used it. Although an evergreen, it is an excellent street tree, as it is large, spreading and open. The palmetto and palms thrive and may be used for formal effects. The evergreen magnolia is a good broad-leaved evergreen. The laurel oak is evergreen in the southern parts of the region.

Region 13 consists of the southern part of Florida. The deciduous trees suitable for this section are the willow, Spanish and southern red oaks, American elm, Mississippi hackberry, and in the southern half of the region the Poinciana. Evergreen trees are better suited to this region than to any other portion of the United States, except possibly southern California. Among the best are the live and laurel oaks, evergreen magnolia, camphor, rubber, silk oak and Grevillea, and Casuarina.

Trees for Special Purposes

In the heart of a city, where the greatest difficulty is experienced in getting trees to grow, the Ailanthus will probably thrive though nearly all other kinds fail. The sycamore and the London plane are also good. The Carolina poplar will frequently grow in such places, and its use may sometimes be warranted.

For very narrow streets the Lombardy poplar is the best tree. For use within the reach of ocean spray or on sandy lands near the coast, the red oak and the red and scarlet maples are suitable as far south as Charleston, S.C., and the sweet gum and the live-oak are equally good from Norfolk southward and along the Gulf of Mexico. The red oak, sweet gum, red maple and eastern live-oak are all grown successfully along the Pacific Ocean, while the California live-oak can be used from San Francisco southward. The trees that endure the most alkali appear to be the bladdernut, the London plane, peppermint gum and its variety, Eucalyptus amygdalina angustifolia and the Washingtonia and other hardy palms, Canary Islands date palm, camphor tree, and acacia cyclops and acacia retinodes. Only the first two withstand severe freezing weather. The red oak and the red maple are worth testing for alkali conditions.

Descriptions of all these trees, telling how root growth takes place and whether or not they are injurious to sidewalks and sewers, will be found in detail in Farmers' Bulletin 1208, which may be secured from the Division of Publications, U. S. Department of Agriculture.

Acknowledgment.—Photographs by courtesy of Lewis & Valentine, New York City.

A Sad Record of Destruction of American Homes and Industries

Thirty Cities Showing Highest Per Capita Fire Loss in 1921

City	Loss	City	Loss
Santa Barbara, Calif.	$51.99	Petersburg, Va.	$10.17
Fresno, Calif.	33.46	Long Beach, Calif.	9.88
Pine Bluff, Ark.	25.95	Norfolk, Va.	8.93
Garfield, N. J.	24.35	Gloversville, N. Y.	8.52
Augusta, Ga.	23.93	Butte, Mont.	8.41
Fort Smith, Ark.	23.42	Paducah, Ky.	8.38
Charleston, W. Va.	22.25	Macon, Ga.	8.35
Lexington, Ky.	20.79	Lansing, Mich.	8.01
Olean, N. Y.	14.10	Kansas City, Mo.	7.93
Meridian, Miss.	13.91	New Haven, Conn.	7.91
Concord, N. H.	12.45	Columbia, S. C.	7.85
Charleston, S. C.	11.07	Springfield, Mass.	7.81
Wichita Falls, Texas	10.84	Ann Arbor, Mich.	7.72
Dallas, Texas	10.77	Shamokin, Pa.	7.65
Sioux City, Iowa	10.70	Charlotte, N. C.	7.35

—*From "Safeguarding America Against Fire," National Board of Fire Underwriters.*

The Economic Loss Due to Rats

The Results of an Investigation in Dallas, Texas

By C. M. Adams
City Sanitarian, Dallas, Texas

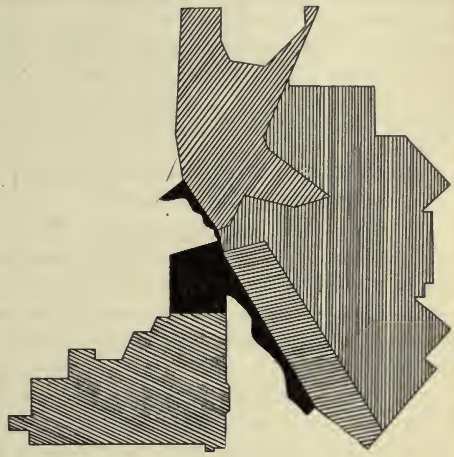
IN the year 1920 the bubonic plague appeared along the Gulf Coast of the United States. The Texas cities of Galveston and Beaumont were among the stricken, and while the loss of life was not great, thanks to the prompt action of the United States Public Health Service, the economic loss accruing to these cities and to the entire state, due to quarantines arising from the plague, mounted up into the hundreds of thousands of dollars.

The Health Department of Dallas has taken great pains in compiling figures showing the losses suffered by the citizens of Dallas through the ravages of the rat. To have some definite facts upon which to base these estimates of the economic losses incurred through the rodent family, a survey was made by the inspecting force of the Health Department.

The Method of Investigating

The city was divided into ten districts for purposes of comparison, and the inspecting officers in each district made a careful canvass of each place visited, to determine the amount of damage due to rats. They visited residences and business establishments alike. In addition to listing the monetary damages by rodents, the inspecting officers endeavored to find out whether or not a rat extermination campaign was deemed advisable by the general public, and to what extent the public would cooperate in such a campaign. They also listed very carefully any suggestions offered as to the conduct of such a campaign and as to special methods of rodent destruction.

A summation of the figures secured by each of the inspecting officers shows that 54 per cent of all the buildings in Dallas are infested to some extent by rats and mice, and that 33 per cent reported a definite loss in dollars and cents. The average daily loss due to the depredations of these two members of the rodent family was found to be 12.1 cents for each occupied building, such as a business establishment or a dwelling. The available records show that on December 1 there were in Dallas some 40,500 such buildings, and an average daily loss of 12.1 cents per building makes a total daily loss of $4,900, which amounts to the stupendous sum of $1,788,500 annually. Estimating the average economic production of a man as $2,000 annually, it requires the energies of nearly 900 men for an entire year to support the Dallas rats.



RAT SURVEY CHART OF THE CITY OF DALLAS SHOWING THE AREAS OF INFESTATION

▥ INFESTATION OF 70%
▤ INFESTATION OF 40%
▨ INFESTATION OF 19%
▧ INFESTATION OF 25%
■ UNINHABITED RIVER BOTTOMS

How Rats Perform

The different ways in which the rat caused losses is very interesting and is worthy of some consideration. Of first magnitude is the loss inflicted through the damaging of foodstuffs. A rat will destroy much more than it requires for food. One lady reported the loss of twelve fine chickens, which were killed wantonly without regard for food capacities. The promiscuous ravages of the rat are nearly as costly as its damage to foodstuffs. A prominent piano company was forced to spend several hundred dollars to rid itself of a small mite or louse which was brought into the building by its host, the rat. These mites would crawl through the cracks in the ceiling and drop on the employees. The women employees were thrown into a state of nervous exhaustion from fighting the mites, and threatened to quit in a body if immediate steps were not taken to relieve the situation. A drug store reported an annual loss of $2,000 through the destructiveness of the rat. One house reported an $85 plumbing bill due to a number of rats attacking the lead pipes and traps.

Lack of Cooperation in Financing Extermination Campaign

A large majority of the people visited believed a rat extermination campaign to be necessary in Dallas at this time, and were willing to assist with the work on their own premises and to lend their moral support. But they wanted it strictly understood that a rat extermination campaign should be financed solely by state or municipal agencies and not by popular subscription or assessment. This attitude of the general public toward the financing of such a campaign has made it impossible at the present time, as neither the municipal nor the state budgets carry any excess appropriation which might be diverted to this work.

Experience has shown that a campaign of extermination, unless accompanied by rat-proofing measures, gives but temporary relief, at best, owing to the fecundity of the rat. The ordinary brown rat, or Mus Norvegicus, breeds with a rapidity hardly believable. The female breeds at the age of three months, and brings forth a litter averaging about ten members every six weeks. The United States Department of Agriculture estimates that the progeny from one pair of rats breeding uninterruptedly and without deaths would at the end of three years number three hundred and sixty million individuals. It is indeed fortunate for us that the vital concurrence among the rat family renders their average span of life exceedingly short.

Rat-proofing is the solution of a de-ratization problem, because the rat cannot exist without food and shelter, and rat-proofing denies both of these to him. But complete municipal rat-proofing is a serious thing in that it involves the expenditures of large sums of money to reconstruct all the buildings. The next best thing to complete municipal rat-proofing is gradual rat-proofing, by requiring by ordinances that all new buildings be constructed on completely rat-proof plans, and requiring that all buildings constructed previous to the passage of the ordinance be made rat-proof whenever a permit is issued for their alteration or repair.

The State Board of Health in its suggested rat-proofing ordinance requires that:

> "The foundation walls of all buildings erected hereinafter the passage of this ordinance, built less than 24 inches above the level of the ground at all points, shall be of concrete, brick or stone, laid in cement mortar, or of some equally good rat-proofing material. The walls, if constructed of concrete, shall be not less than 6 inches thick, and if constructed of brick or stone, not less than 8 inches thick. Such walls shall extend around the entire area to be occupied by the building and below the surface of the ground to a depth of at least 24 inches. Any building in which foodstuffs of any kind are to be stored or offered for sale shall have the full floor area covered by concrete not less than 4 inches thick, and all floors which are situated below the level of the lowest street on which the building touches shall be similarly

THE EXTENT OF THE RAT DAMAGE IN DALLAS AS SHOWN BY THE SURVEY

District No.	Per Cent Having No Rats	Per Cent Reporting Some Damage, But Non-Estimable	Per Cent Reporting Estimable Damage	Total Per Cent Reporting Any Damage	Amount of Damage per Day	Average Loss in Dollars per Day to Those Reporting Money Losses	Total Average Loss in Dollars per Day
1	97.5	0.0	2.5	2.5	$0.20	$0.20	$0.002
2	1.1	46.6	52.3	98.9	12.33	0.52	0.274
3	36.9	35.1	28.0	63.1	9.57	0.60	0.168
4	30.9	23.8	45.3	69.1	4.55	0.24	0.108
5	30.0	70.0	0.0	70.0	0.00	0.00	0.000
6	80.8	0.0	19.2	19.2	1.30	0.27	0.050
7	81.0	13.6	5.4	19.0	2.00	1.00	0.054
8	49.4	1.2	49.4	50.6	13.40	0.31	0.157
9	72.5	6.9	20.6	27.5	1.70	0.28	0.060
10	37.4	27.3	37.3	65.6	6.90	1.72	0.627
Totals	46.1	21.0	32.9	53.9	$51.95	$0.366	$0.121

covered by a layer of concrete not less than 4 inches thick."

The Dallas Housing Commission has incorporated in its "Model Housing Ordinance," to be presented to the Mayor and Board of Commissioners, a complete rat-proofing provision for all buildings erected after its passage. The passage of such an ordinance would do much toward alleviating the losses incurred through the destructiveness of the rat, but Dallas will continue to suffer enormous economic losses from the rodent family until a large majority of all buildings have been rat-proofed.

Hose Threads of 250 Cities Standardized in Two Years

FIRE chiefs and others concerned in the improvement of fire-fighting facilities will be interested to learn that more than 250 cities have, within the last two years, converted their fire hose threads to the National Standard.

It is generally conceded that discrepancies in fire hose threads, such as are still found in the vast majority of American cities, have been responsible for the spread of some of our most disastrous fires. What happened during the Baltimore conflagration, when engines arriving from other cities were forced to stand idly by because they could not connect their hose to local hydrants, is still remembered. The sweep of the more recent conflagration at Mobile, Ala., might perhaps have been stayed had it not been for the time lost in desperate and unsuccessful attempts to couple up the hose brought from a neighboring shipyard.

Lack of uniformity in hose threads has played its unfortunate part in nearly every fire of conflagration proportions in the last half-century. Indeed, it is not inconceivable that the fate of a city may at some time hang upon a hose thread.

Throughout the greater part of the country, cities still differ from each other in the matter of fire hose threading, but the Committee on Fire Prevention and Engineering Standards of The National Board of Fire Underwriters—which is leading the fight for uniformity—sees reason for optimism in the undoubted interest and willing cooperation it has received from both officials and the public in cities where standardization has been effected. The Committee re-

STANDARDIZING HYDRANT THREADS

A crew from the Hackensack, New Jersey, Water Company altering the local fire plug connections so that they will conform to the National Standard.

ports that standardization is now well under way in Michigan, Indiana, Iowa, Minnesota, New Jersey, Ohio and Rhode Island, and is being favorably considered in at least three other states. Lately, the Railway Fire Protection Association has started a movement to bring about hose thread uniformity in railroad property throughout the entire country.

It must indeed be a peculiar logic that could reason against a reform at once so necessary and so easily and inexpensively inaugurated. The Committee's records on the completion of work in seventy-five cities, for example, show an average cost per municipality of only $40—an insignificant sum compared to the benefits secured. Besides making possible effective outside aid in event of large fires, and permitting the connection of department hose to the standpipes of factories, standardization provides ideal fits, perfects mutilated or badly worn threads and insures uniform threads in ordering new fittings.

Through the valuable service rendered by the underwriters' bureaus having jurisdiction, steps have recently been taken to chart the existing hose thread situation in every state. This is being accomplished through the distribution of recently prepared thread record sheets and by mapping the data thus obtained. A suggested method of procedure for accomplishing the statewide standardization of threads on fire hose couplings and fittings was recently sent to all bureaus, fire marshals' offices and state fire chiefs' associations.

One of the latest cities to have its hose couplings and hydrant outlets brought to conform with the National Standard is Elyria, Ohio. State Fire Marshal Dykeman, who says that 1,583 connections were standardized, gives much credit to members of the Elyria Fire Department who donated their "time off" for this important work, with a corresponding saving to the municipality.

Now that this standardization movement has attained headway, been strongly endorsed, and received generous public and private support, the Committee sees no good reason why in the near future it should not be able to report its adoption in every state in the Union. Once the National Standard fire hose thread is in general use throughout the country, says the Committee's report, a material reduction in fire loss may be looked for with certainty.

PARTIAL LIST OF CITIES IN WHICH HOSE THREADS HAVE BEEN STANDARDIZED

Indiana

New Castle
South Bend
Fort Wayne
Richmond
Anderson

Iowa

Marshalltown
Dubuque
Ottumwa
Waterloo
Independence

Michigan

Flint
Adrian
Ann Arbor
Saginaw
Owosso
Lansing

Ohio

Elyria
Chillicothe
Bellefontaine
Sabina
Greenfield

Resolution of Board of Health Upheld

THE United States Circuit Court of Appeals, Fourth Circuit, has upheld the action of a county board of health in North Carolina in prohibiting circuses and carnivals in a county during a certain period to prevent the spread of communicable diseases. The resolution of the board of health stated that the county was just recovering from a serious epidemic and that communicable diseases were prevalent elsewhere. The owner of a traveling show brought suit when a license was refused him, but the court sustained the action of the board of health. The following is quoted from the opinion:

> Nothing is better settled than that in the consideration of ordinances and laws of the character in question here, every intendment is to be made in favor of the lawfulness of the exercise of municipal power, making regulations to promote the public health and safety. (Dobbins v. Los Angeles, 195 U. S. 223, 225, 25 Supp. Ct. 18, 49 L. Ed. 169.) It is not for the courts, in the administration of justice, to substitute their judgment for that of the legislative or municipal authority or to interfere with the lawful exercise of the power and authority granted in furtherance of the ends desired, unless those acting have plainly and manifestly exceeded their power and authority to the prejudice of those affected. This is strikingly true in considering rules and regulations coming clearly within the domain and discretion of public health authorities. * * *

Centrifugally Cast Iron Pipe

Successful Method Developed in the United States Produces High Grade Pipe

THE problem of utilizing centrifugal force in producing pipe and other castings of cylindrical shape is one that has occupied the attention of inventors for many years. As early as 1809, the first English patent covering centrifugal casting was issued to Anthony Erkhardt of England. From then on, the records of the Patent Offices contain numerous patents covering centrifugal processes; but records indicate no appreciable tonnage of castings was produced centrifugally.

Pioneers in the field were handicapped by their reluctance to depart from usual foundry practice. Almost all of the early inventions contemplated lining the mould with sand; and this presented mechanical difficulties that were not successfully overcome for commercial production. Some inventions were used successfully, to a limited degree, with the non-ferrous metals, and in a small way with ferrous metals; but none, apparently, were able to fulfill the requirements of commercial production as applied to cast iron pipe until the process invented by D. S. deLavaud was perfected.

CENTRIFUGALLY CAST IRON PIPE LAID AT 63rd AND CHESTNUT STREETS, PHILADELPHIA

Mr. deLavaud, in his endeavor to make cast iron pipe in centrifugal moulds, as might have been expected, encountered many of the difficulties of the early inventors. At first, he tried pouring the iron into a heated mould, but this prevented the extraction of the pipe for a considerable time after pouring, and the finished product was very brittle and easily broken. After experimenting along this line for a considerable time, the heated mould was abandoned. The use of a cold metal mould had been considered for some time, but none of the regular foundrymen were sure what the effect would be on the heated metal, and when such a mould was finally made by Mr. deLavaud, it was necessary for him to pour the first few pipes himself. This effort was successful, and a perfect pipe was formed, which could be withdrawn from the mould immediately upon the completion of the pouring. From this machine was developed the deLavaud centrifugal machine as at present used, consisting of a rapidly revolving water cooled mould which has been machined to the contour of the outside of the pipe; and the process as it now stands may be briefly described as follows:

The required amount of metal is tapped from a cupola, and conveyed to the ladle of the machine. This ladle is so designed that it may be emptied at a predetermined rate of speed resulting in an even flow of metal down the runner or spout extending into the mould. When the mould is revolving at the correct speed, pouring is started, at the bell end, and continued throughout the length of the pipe. and, as pouring starts, the mould is moved away from the spout. The thickness of the pipe is governed by the speed of revolution and the movement of the mould away from the pouring spot. At the completion of the pouring, the pipe is withdrawn from the mould and put in an annealing oven, which removes any possible casting strain or chill.

To the most casual observer, the appearance of the pipe is different from that of the sand cast article. The smooth metal and perfect contour are instantly recognized. The interior of the pipe is smooth, the walls of even thickness, the outside of constant diameter and with the bell shaped to automatically center the pipe, much easier and quicker laying is obtained. The metal of the pipe itself has all the advantages that one would naturally think should accrue to metal cast under the pressure to which the centrifugal force subjects it. It would be commercially impracticable, as well as impossible, to secure by a riser, a sufficient head of metal to even approximate, in a sand casting, the pressure obtained in the deLavaud process.

Tests of the deLavaud metal show that its physical properties are about double those of the sand cast iron, the tensile strength generally running over 35,000 pound per square inch, and the other physical properties being about in proportion. The method of casting, and the much greater strength of the product, permit of a considerable saving in weight without impairment of the factor of safety. Numerous pipe have been tested to the limit of the test press, namely 2,200 pounds, without any sign of rupture. The centrifugal force causes all impurities in the metal to pass out of the iron itself, and there is, of course, no possibility of sand or other impurities being caught within the walls of the pipe.

Authorities believe that pipe of this kind will corrode more slowly than the rougher sand cast pipe, inasmuch as the surface of deLavaud pipe is much smoother; and, furthermore, the homogeneous structure which is characteristic of the deLavaud metal would indicate that its resistance to electrolysis would be much greater than the sand cast metal.

The manufacturing rights of the deLavaud pipe are controlled in the United States of America by the United States Cast Iron Pipe and Foundry Company, who have been operating a small practice unit at their Burlington, N. J., plant; but who are now completing the installation of a unit of a considerable size at their North Birmingham, Alabama, plant, and expect to offer the pipe commercially quite soon.

Some Counties Still Seeking Bids for Engineers' Services

Abominable Practice Again Found Among Western Counties

MANY of the counties in Iowa are so little convinced that an engineer is an economic asset to them that they do not hesitate to advertise for bids for engineering services and to accept the lowest bid. Only a few weeks ago such a case occurred in one of the counties. The Secretary of the Iowa Engineering Society, learning at the last minute what was planned, sent the county auditors a letter which arrived at the moment the bids were being opened; therefore, the letter was opened and read along with the bids. Part of it read as follows: "Your county engineer is a vital factor in the conduct of the affairs of your county and upon him depends a great deal how much money is saved to your county in carrying out the road programs. It is considered unethical among the best class of engineers to submit bids on the basis of salaries and for this reason your county more than likely will not get the best engineering services. The best engineer you can get should save your county more than his salary in any year. If he cannot, he has very little excuse for existing. With these facts in mind, you will see that it is to your interest to employ your engineer on the basis of his fitness for the position." Strange to say, the Board of Supervisors was so impressed by this letter that they rejected all the bids which they had secured and reemployed their former county engineer.

Consider the Property Owner in Roadside Planting

IN the choice of varieties and the general arrangement of planting along roadways, it should be the intention to consider the abutting property owners and to so plan the work that it will be a benefit to him, as well as an improvement to the highways. There are many kinds of useful and ornamental trees adapted to different conditions of soil and growth, and it is usually possible to use them successfully.

Mosaic Maps of Cities

Aerial Maps Taken Vertically or Obliquely Serve Many Purposes in Municipal Administration and Publicity Work

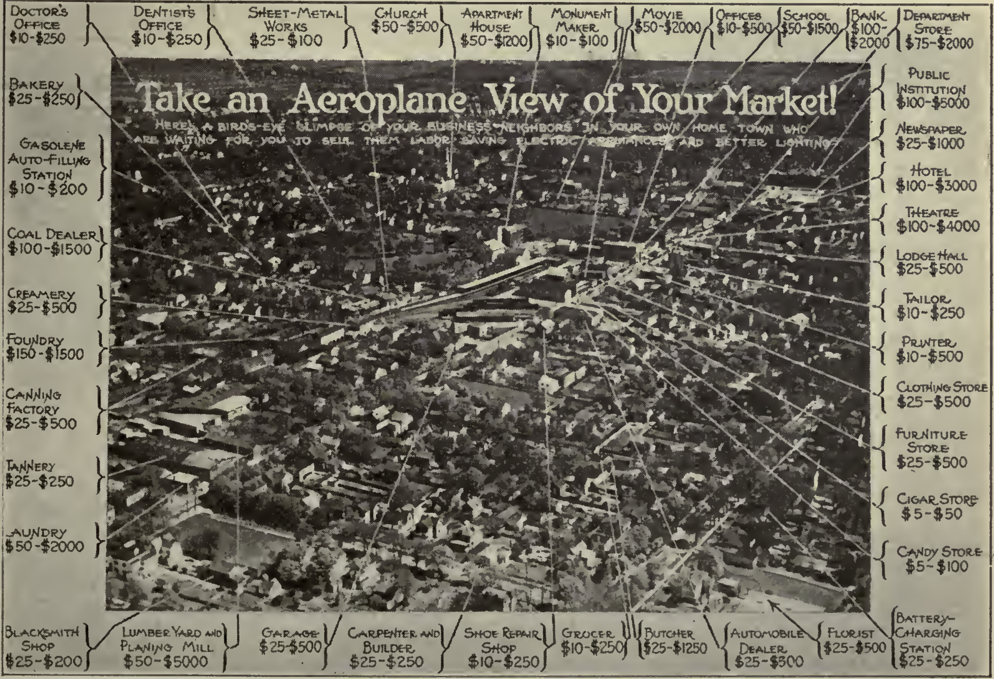
THE mosaic map of New York City, taken at an elevation of 10,000 feet and made from 100 photographs taken in 69 minutes, has received so much publicity in the press that it is scarcely necessary to describe it in detail. Other cities are having such maps made for practical use. These maps show office buildings, motor cars on the streets, the roofs of factories, mansions and tenements, show the smoke belching from improperly stoked fires, and the oil-flecked water-front with the various centers of population and dense traffic portrayed in true proportions and convincingly—all at a glance.

Comparing the mosaic map of New York City with that of a well-known map-producing firm showing Manhattan Island, it was found that the lithographer had actually placed one of the parks a whole block out of the way. In large cities similar errors might be possible, but from a photographic map everything is shown in true proportion and in its proper location.

Uses in Specific Departments

Police inspectors have found aerial survey maps of great value, as it is possible to examine them carefully and note the location and details of every roof exit, scuttle hole and skylight. This information has been used to good advantage in directing a raid or surrounding a burglar.

The relative advantages of photographs taken from different heights vertically and obliquely are various. It is possible to take photographs of a large area with some accuracy at an altitude of 35,000 feet, though



THE AERIAL PHOTOGRAPH CAN BE APPLIED TO CIVIC ADVERTISING

This is an interesting use of an aerial oblique photograph. Aside from showing the growth and shopping facilities within the city limits it also offers an outsider the advantage of looking into the town with a view to transacting business of mutual value. This illustration was used by the "Electrical Merchandising" magazine to visualize the local market to the local electrical dealer. The same idea may be used by a municipality or a chamber of commerce in visualizing the important physical features and opportunities within the city for commercial work, such as map-making and records of this type, 10,000 feet is considered most economical. A 5,000-foot altitude may be used for portraying everything below more clearly than one might see it with the naked eye. Photographs taken at an oblique angle are effective from a pictorial standpoint and may be used, as shown in the illustration, for advertising purposes by a chamber of commerce or other civic organization or by a local merchant who wishes to portray the use of his wares in his own town. An illustration of the value of aerial photographs to the fire-fighter is shown in the case of the old frigate Granite State, which burned to the water and sank at her dock in the North River in New York City. The origin of the fire was a mystery until officials, scanning the aerial photographs made of the fire and immediately preceding it, discovered the presence of a foreign substance floating on the surface of the water along that part of the water-front. This proved to be oil. An investigation resulted in tracing the oil to a broken pipe line on the river bottom. No factory or plant using the waterway for illegal sewage disposal purposes can avoid the eye of the aerial camera. It has demonstrated its efficiency in scores of cases and has been accepted by courts as material and relevant evidence.

An Aid in Showing Fire Losses

Again, the value of the aerial photograph in demonstrating fire losses is shown by the case of the Erie Railroad pier fire in Jersey City. The damage to the pier was easily shown and proved to the insurance adjusters by the railroad. But when aerial views showed the paralyzed state of traffic in the yards and on all the trackage, it was not difficult to convince the insurance adjusters that the material damage amounted to more than the burning of the piers.

Depicting Transportation Facilities

The aerial photographs taken for Arthur S. Tuttle, Chief Engineer for the New York Board of Estimate and Apportionment, covering the proposed marginal railway territory, freight-classifying yards and belt-line roads connecting all the railroads terminating in New York, were found of tremendous value from the time-saving and economical points of view. The mosaic map prepared from the photographs put the plan most comprehensively before the railroad executives in the quickest possible period of time. One of the most interesting facts was that the location of water-front property on Staten Island along Arthur Kill, close to New York, was yet undeveloped, while on the opposite shore of Arthur Kill in New Jersey, the aerial view brought out distinctly the active industrial conditions there, made possible by excellent rail facilities. Thus, Mr. Tuttle was able to demonstrate the feasibility of his railway plan in tying up transport with the new Staten Island piers. Such demonstrations may save cities many millions of dollars and enable chambers of commerce to show prospective manufacturers the value of transportation facilities in specific locations within their cities.

Engineers have used aerial maps in the laying out of the various routes, enabling them to avoid residential sections, graveyards, highways and other obstructions which might possibly not have appeared in a preliminary report of the proposed right of way, had the topographic maps been made in the usual way.

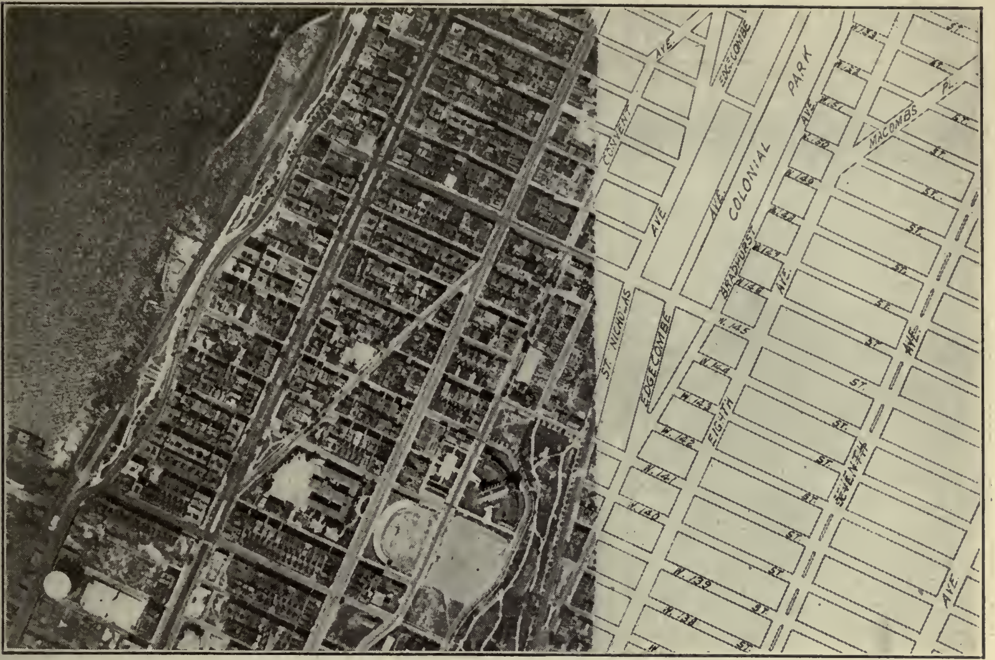
Recording the City's Growth

Another valuable use of the aerial photograph is in recording the growth of new sections of a city or town. By taking photographs at regular intervals, a detailed history is obtained. It is much easier to follow a record of this type than to examine old diaries and town hall records. Real estate men are already making use of this method of showing the development of the new sections, appreciating the value of the aerial photograph.

Making Line Maps

Line maps can be made directly from aerial photographs. Maps are necessary wherever human beings would live and prosper. Photographic mosaic or aerial maps can easily be made into a line map by eliminating non-essential details. The details that are to be saved are inked in with a water-proof India ink and then the background or photographic portion is washed off with chemical, thus leaving an accurate record to a known scale.

As Nelson P. Lewis, consulting city planning engineer with the Russell Sage



DEVELOPING A MAP FROM AN AERIAL PHOTOGRAPH

A regular print of the aerial map is made on a dull paper, the street, alley and boulevard lines are inked in with water-proof India ink, and then the photograph is washed off by being dipped in a chemical bath. By enlarging or reducing the map, a definite scale may be secured. The map above was prepard in this manner. The aerial map of one city showed an error of one block in the location of a park on the old official map

Foundation, said in his article on "A New Aid in City Planning" in the March, 1922, issue of THE AMERICAN CITY:

"The development of aerial photography has made it possible to secure information of very great value at relatively small expense; such information as will make it possible to decide both quickly and intelligently upon some general features of the plan which can be developed most economically and with best adaptation to topography. One can ride or even walk over the territory for which a plan is desired. He may follow the valleys, climb over the ridges, observe the location of buildings and of wooded tracts available for public playgrounds and other essential features, but will retain only a confused idea of their positions with respect to each other. Suppose, however, he were to look down upon this territory from a height of one or two miles and to carry with him a permanent and accurate record of what he saw. How greatly it would help him to decide upon the general scheme, the details of which may be developed later."

The First Brick-paved Street in the United States

Twenty-seven Year Old Pavement Still in Good Condition

CHARLESTON, W. VA., claims to be the first city in the United States to use brick for street paving. Although brick have been used to pave streets in European countries, principally Holland, for nearly a century, they were not tried in the United States until 1871, when Charleston paved Summer Street with building brick, which served for 28 years. The State Museum at Charleston has on exhibition the first brick laid in the street, from which not more than 1 inch was worn in the generation it served. In 1894, Quarrier Street was paved with brick and, although over 27 years old, is still in good condition to-day. The brick were laid on a base of 3 inches of sand, 1 inch of tarred oak planks, and a second 3-inch layer of sand.

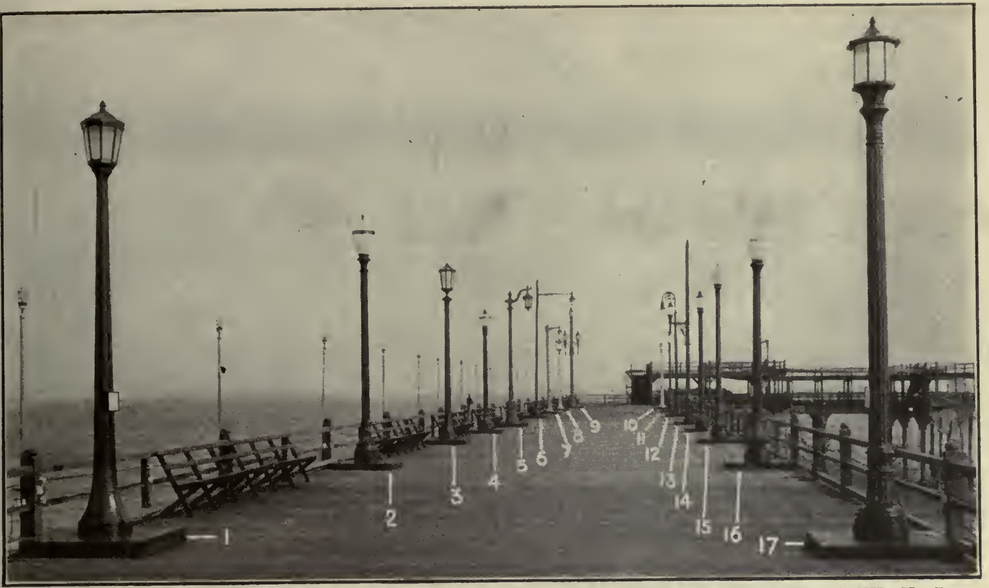
Police, Fire and Street Lighting Equipment

TWO POLICE PATROL TRUCKS USED BY ST. LOUIS, MO., POLICE DEPARTMENT—AT LEFT A GMC, AT RIGHT A WHITE TRUCK

In addition to four of these "hurry-up" trucks, the Department has found it a great time-saver to keep a GMC supply truck in service for carrying gasoline, oil, etc., at a moment's notice any time during the day or night. Photograph furnished through the courtesy of Martin O'Brien, Police Chief, St. Louis, Mo.

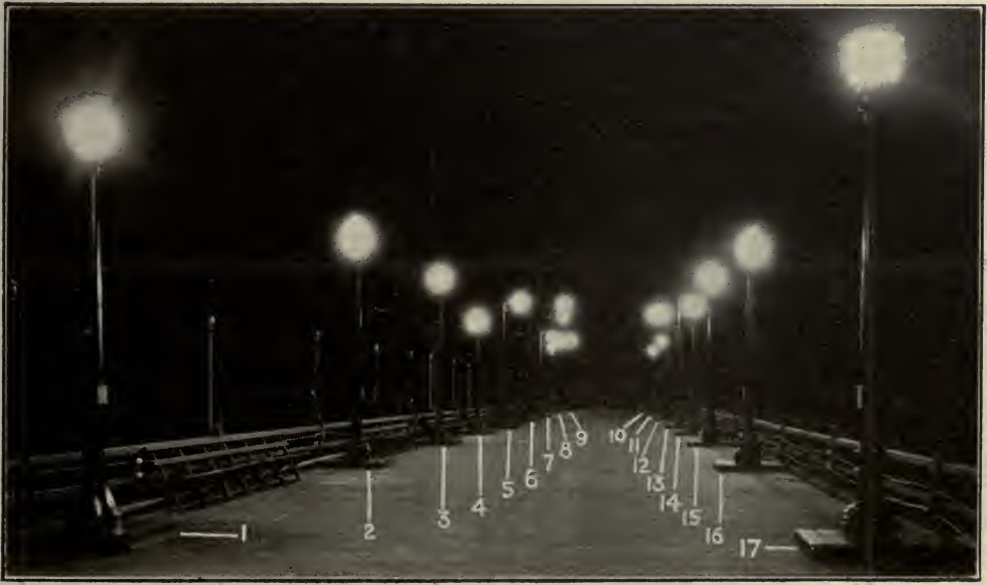
AN EFFECTIVE FIRE TRUCK OWNED BY THE STOUGHTON, WIS., FIRE DEPARTMENT

The chassis of this car was built by the Stoughton Wagon Company, Stoughton, Wis., and consists of a regular 2-ton job equipped with Hercules 52-horse-power motor and 36 x 8-inch Goodyear solid tires. The car carries complete pump and chemical equipment as well as ladders, lanterns, 1200 feet of 2½-in. standard fire hose, etc., equipment furnished by Peter Pirsch & Sons Company, Kenosha, Wis. This photograph was furnished through the courtesy of Giles Dow, Fire Chief, Stoughton, Wis.



STREET LIGHTING STANDARDS AND FIXTURES DISPLAYED AT ATLANTIC CITY, N. J.

1. Octagonal reflector-lux lantern with clear ribbed panels and ornamental standards made by the George Cutter Works, Westinghouse Electric & Manufacturing Co. 2. Novalux upright unit with polycase glass globe and polycase canopy made by General Electric Co., with King Mfg. Co. standard. 3. G. E. Novalux lantern unit with dome refractor and Colonial alabaster glass panels, on Union Metal Mfg. Co. standard. 4. Egyptian upright unit with Monax glass globe and Cutter standard. 5. G. E. Novalux lantern unit with dome refractor and clear rippled panels on Union metal standard. 6. G. E. basket style Novalux unit with clear rippled glass globe on Union metal standard. 7. G. E. basket style Novalux unit with dome refractor and rippled alabaster glass globe on Massey Concrete Products Corp. standard. 8. Two-piece glass refractor made by the Holophane Glass Company, metal fixture parts made by Line Materials Co., on Massey concrete standard. 9. G. E. Novalux upright unit with dome refractor and stippled glass panels on Union metal standard. 10. Three-piece Holophane glass refractor, Line Materials Co. metal fixture parts on Massey concrete standard. 11. G. E. Novalux harp-type unit on King standard. 12. G. E. Novalux pendent unit with dome refractor and alabaster rippled globe on Union metal standard. 13. G. E. Novalux upright unit with Genco glass globe and metal canopy, on Elreco combination railway and lighting pole, made by the Electric Railway Equipment Co. 14. Sol-lux upright unit with Monax glass globe, metal canopy and Cutter standard. 15. G. E. Novalux upright unit with dome refractor and alabaster rippled globe on King standard. 16. Sol-lux upright unit with Monax glass globe holding band, Monax glass canopy, on Cutter standard. 17. Colonial reflecto-lux lantern with clear ribbed panels on Cutter standard.



Chamber of Commerce Activities in Public Affairs

Akron Chamber Clears the Air

Akron, O.—"Education" rather than official regulation has been the slogan of the Smoke Abatement Committee of the Akron Chamber of Commerce in its efforts to improve the smoke conditions in Akron.

The Chamber's offices are near the top of one of the highest office buildings in the city, and the committee in starting its work two years ago called a meeting to which were invited representatives of the office buildings, hotels, factories and railroads. Then from the Chamber's windows overlooking the city these men were asked what they thought of the smoke pouring from their chimneys, and what they would do to help improve the conditions. In reply they promised their cooperation.

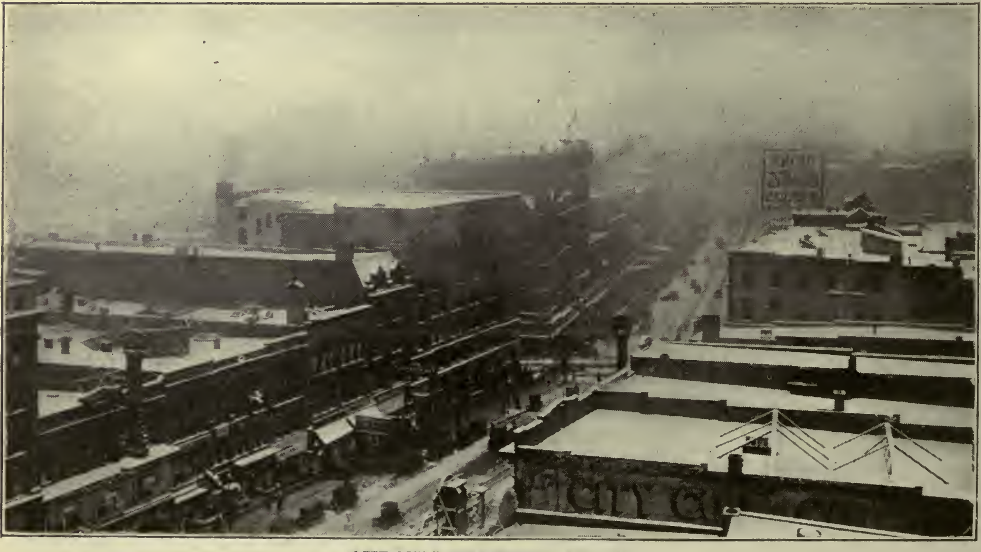
The Committee then secured suggestions from the engineering members of the committee as to changes that might be made in different heating plants to eliminate smoke. As a result, the heating plants in the principal hotel and in about a dozen of the downtown buildings were changed. The railroads instructed their engineers and firemen to fire their engines as carefully as possible while passing through the city.

The improvement in smoke conditions during the succeeding winter was most marked.

While the streets and tops of the buildings were covered with snow, making a good background for the black smoke, the committee had a photograph taken which showed the undesirable smoke conditions. This was reproduced in a leaflet giving instructions for the use of firemen in methods which would help to abate smoke.

This leaflet gave the following as the three primary causes of smoke:

1. Lack of air.—The air necessary for complete combustion.



AKRON'S SMOKE PROBLEM
As the committee saw it from the office of the Chamber of Commerce

PIERRE'S SELF-HEATING MUNICIPAL SWIMMING POOL

2. Lack of temperature.—The temperature in the firebox should be high enough to secure complete combustion.

3. Lack of space or time.—The gas moves while in process of combustion, and if the flame encounters the relatively cold surfaces of the boiler, combustion will be checked and carbon or soot will be deposited.

At the close the leaflet summed up the suggestions as follows: Don't fail to—

1. Keep heating surfaces of boilers clean and free from soot and scale.
2. Be sure boiler settings are tight and free from all air leakage.
3. Use dampers to regulate draft.
4. Keep fires level and free from air holes.
5. Do not carry fires too thin.
6. Do not carry fires so thick as to cut down draft and cause incomplete combustion.

VINCENT S. STEVENS,
Secretary, Akron Chamber of Commerce.

Pierre's Municipal Swimming Pool

Pierre, S. Dak.—The idea of a municipal swimming pool for Pierre originated in the Athletic Department of the High School. The Commercial Club fostered the enterprise, and the necessary funds were raised by volunteer contributions, both in and out of the Club. The construction was done largely by volunteer labor.

The pool is of concrete, 225 feet long, 150 feet wide, with an irregular shaped shallow pool for the kiddies.

The water comes from a natural gas well and flows into the pool at a temperature of 96° Fahr. the year around. Plain board dressing rooms are provided. The pool is open from 10 A. M. to 10 P. M., and has attendants during these hours.

A supervised playground is located on the right-hand side of the picture, but does not show. The pool and playground are lighted by electricity.

J. F. BROOKE,
Secretary, Pierre, Commercial Club.

A Motor Transportation Company Organized

Bluefield, W. Va.—Realizing the great need and value to this city of procuring better transportation facilities between Bluefield and the 300,000 people in surrounding coal fields, we have organized a motor transportation company that will operate over three separate routes this summer. Modern, comfortable buses, well heated for winter use, have been purchased and will be run on regular, advertised schedules. There is only one railroad serving this vast territory at present, and this road being largely a coal carrier the passenger transportation has been very inadequate. By means of the motor buses hundreds of people will be able to get to Bluefield and return the same day, who are now able to come here infrequently, if at all. Three more routes will be added as early next year as certain road contracts are completed.

CARROLL R. WOODS,
Secretary, Bluefield Chamber of Commerce.

Focusing the City's Activities in the Chamber of Commerce

Atlanta, Ga.—Up to thirty days ago the civic clubs, such as the Rotary Club, Civitan Cub, Kiwanis Club and Lion's Club, *et al.,* were holding their weekly meetings at different points throughout the city. It occurred to the Atlanta Chamber of Commerce that, if all of these civic organizations could hold their weekly meetings in the Chamber of Commerce Building, closer cooperation would be the result, and more effective work would be done for the city of Atlanta. These various clubs were solicited, with the promise that about $25,000 would be spent in improvements to our building, in order fully to meet their requirements as to luncheons and offices in our building.

Such improvements are now complete, and on every day in the week some civic club of Atlanta, averaging 200 strong, is holding its meeting and taking luncheon in our building.

B. S. BARKER,,
Secretary, Atlanta Chamber of Commerce.

Thirty-five Organizations Cooperate in New Orleans

New Orleans, La.—Organization of a Civic Council in New Orleans has made it possible to throw the weight of thirty-five civic organizations behind a general civic clean-up campaign.

The Civic Council, which was organized by the Association of Commerce, consists of one representative from every organization of importance in New Orleans. The chairman is Harold W. Newman, President of the Association of Commerce.

The campaign undertaken by the Council has been divided into three groups with one committee to handle each group. These are as follows:

A. *Eradication of flies and mosquitoes.* This includes the cleaning-up of breeding places, and of all avoidable attractions, such as stagnant pools, unnecessary water containers, etc., and the full protection of containers which must be maintained. In fly eradication, it will include the proper enforcement of existing ordinances relating to stables, use of fly-proof garbage cans, proper handling of garbage and of receptacles in which garbage is placed or transported, and the elimination of garbage-dumps within the built-up sections of the city. The chairman of this committee is V. A. W. Steger, of the Young Men's Business Club.

B. *Street clean-up.* This covers the removal of signs from poles and trees and preventing further offenses of this nature, and the control of street noises; spitting on sidewalks; throwing trash, handbills, etc., in the streets and similar subjects. The chairman of this committee is P. A. Chopin, President of the Lions' Club.

C. *The complete elimination from the entire city of the Argentine ant.* Mrs. Jesse P. Wilkinson, Chairman, Civic Department, City Federation of Clubs, is chairman of this committee..

Committees A and B have held meetings, and have practically completed the work preparatory to launching the campaign. The campaign to eradicate the Argentine ant is merely a continuation of a campaign launched several months ago by the New Orleans *Times-Picayune.*

The committees are composed of the chairman and one representative from each of the organizations composing the Civic Council. A general executive committee, which will consider matters not within the jurisdiction of any of the committees, has been organized with A. M. Shaw, Chairman of the Association of Commerce Health and Sanitation Committee, as chairman.

The method to be employed by the Fly and Mosquito Eradication Committee has not yet been adopted.

The present intention of the Street Clean-up Committee is to select a section of the city that is badly in need of improvement and use that as an example of what can be accomplished throughout the entire city. This plan is being considered on the theory that cleanliness is contagious, and that each householder follows the example set by his neighbor in keeping his premises free from an accumulation of debris.

CHARLES E. WHITE,
Publicity Department, New Orleans Association of Commerce.

How Charlottesville Nominated Its City Commissioners

Charlottesville, Va.—The first election of members of the City Council under the new commission-manager charter of Charlottesville, Va., was held in June. Prior to the election, the various civic bodies of the community united in an unusual movement to secure the nomination of three of the ablest and most public spirited men of Charlottesville. To this end the Chamber of Commerce, the Young Men's Business Club, the Rotary Club, and the League of Women Voters each named a committee of three. This joint committee of twelve was instructed to work out some practical plan to insure the nomination of the right men. Three long sessions were held, scheme after scheme was discussed, and it was finally decided to appoint a committee of fifty-five to do the nominating. That committee was composed of men and women, white and colored, young and old, and represented all classes and each ward according to its population. The large committee finally assembled at the Elks' Club, and not till then did any member of the committee learn who the others were. The session continued from 3 till 7:30 o'clock, and 15 secret ballots were taken before a choice was arrived at.

Not satisfied with the action of the committee of fifty-five, persons who have long been prominent in political life got together and nominated other candidates. The election was held June 13th and by a three-to-one vote the nominees of the committee of fifty-five were elected—a notable endorsement by the people of the movement initiated by the civic bodies. Since the election the commissioners have employed as city manager Mr. Boyd A. Bennett, formerly Assistant Business Manager of Lynchburg, Va.

CHARLOTTESVILLE CHAMBER OF COMMERCE.

An Educational Loan Fund

AUBURN, MAINE.—Initial steps have been taken toward setting up an educational fund to assist boys and girls of this city in securing higher education. The fund will be administered by a board of trustees, chosen by the Board of Directors of the Chamber of Commerce. The funds will be loaned at six per cent interest and notes will be taken as security.

EARL S. LEWIS,
Secretary, Auburn Chamber of Commerce.

What a League of Neighbors Means

By Eugenia H. Weller

Community Service, Elizabeth, N. J.

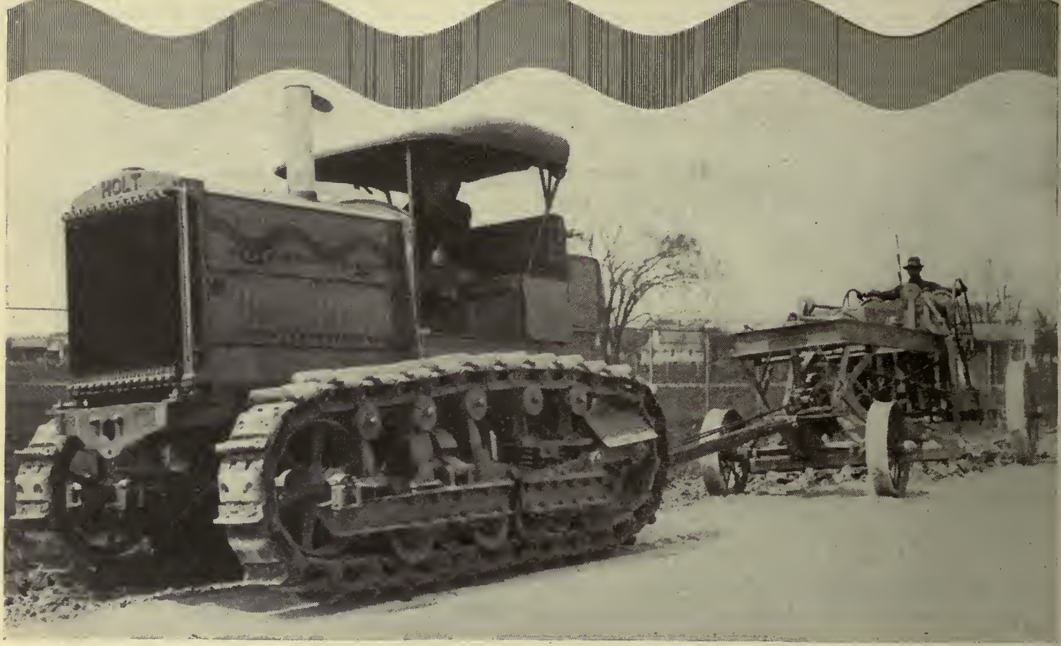
ELIZABETH, N. J., is a varied community—an industrial city grafted upon a conservative colonial village. Its shops and factories draw into the life of the place varied groups from many lands, and the tides of immigartion that flow over and beyond New York City bring drifting there the ambitions, the ideals and the tragedies of all the world. In this polyglot community, the local Community Service staff are building up with slow and careful steps their "League of Neighbors."

On the 27th of April was held the "League of Neighbors Festival"—the grand climax of four presentations of this concrete study in world-fellowship. Each assemblage had been larger than the last. On this final occasion nearly four thousand people gathered together. About fifty groups took part in the pageant-parade and a dozen of these made their contribution of music and dancing to the evening's entertainment.

Five continents were represented and many islands of the sea, but the geographic range was no wider than the difference of creed, character and circumstances that marked the various groups.

Jews, Christians; Catholics, Protestants; black and white; the Woman's Club, men's fraternal orders; Boy Scouts, and beside them Portuguese, Germans, Italians, Assyrians, Poles, Scotch, Ukainians, Bohemians, Hungarians, and Spanish-speaking people from Spain, South America, Central America, the West Indies and the Philippines.

"The best vaudeville we ever saw," said some who had watched and listened, but those who had followed and fought down petty prejudices and world-wide hatreds so that this gathering might be, and who had learned to know these people of many classes and many lands, saw not simply a spectacle, but a grand review of human sufferings, hopes, and heroisms, and heard above the twang of the strings and the thunder of the drums the beating of human hearts.



SCARIFYING MACADAM BEFORE RESURFACING

There Is No Substitute for "Caterpillar"* Service

The "Caterpillar's" field of usefulness is by no means limited to civic and public works. There is a "Caterpillar"* of size and capacity for every power need. On farm or ranch, in the mining, oil and lumber industries, for snow removal, wherever tractive power and endurance are at a premium, the "Caterpillar"* has no real competitor.*

Not only are "Caterpillar"* Tractors without an equal in compactness of design, staunchness of build, and consistent pulling power—*they are backed everywhere by prompt Holt Service.* Our branches and distributors maintain fully equipped service stations, that are *real* service stations, in all parts of this and foreign countries. Wherever street improvement, hauling or dirt moving projects are being put through, public officials and engineers find Holt Service within easy reach. Because it is complete and always accessible, Holt Service puts real significance into the guarantee under which every "Caterpillar"* is sold. Let us send you interesting facts and figures or arrange a motion picture exhibition of "Caterpillars"* at work.

**There is but one "Caterpillar"—Holt builds it. The name was originated by this Company, and is our exclusive trade-mark registered in the U. S. Patent Office and in practically every country of the world.*

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Canadian Holt Company, Ltd., Montreal, P. Q., Canada

Milwaukee Adopts Scientific Pension System for Police Department

By Harold L. Henderson

Director, Milwaukee Citizens Bureau

UNDER a recent statute, Milwaukee's Common Council recently adopted for the Police Department a pension system planned on a scientific basis. The new plan provides for a system of cooperative compulsory saving, protection against disability not in performance of duty, and protection for widows and orphans. It is built on the "reserve and allocation plan," under which all contributions made by any employee and by the public on his behalf are credited to him when made. Against these credits will be charged the proper share of the cost of the benefits paid, the balance being reserved for the employee's own benefit or his estate, and never used to pay benefits of any other employee. Resignation or dismissal does not jeopardize the employee's rights, as the ledger accounts of his contributions are kept separate.

The amount of annuity to which a policeman attains at the age of fifty-seven is not based upon the salary paid at that time, but on the amount credited to his account, made up of all the contributions by him and by the city to such account during the years of his service. This is divided by the number of years that the actuary's table shows the pensioner has yet to live. No employee is permitted to receive a pension larger than 75 per cent of his final salary. Employees entering late in life get a smaller pension than those who entered young; thus the old question of a flat pension rate to all employees regardless of length of service is eliminated. This scheme insures to employees who have given a lifetime of service a sum sufficient to spend their declining years on approximately the same standard of living to which they have been accustomed. It appeals to young men and women in and out of the service, and does not act as a barrier to the employment of persons of advanced years, as the city does not incur a greater burden in providing for them than for younger employees.

The five factors of cost in the system are (1) age and service annuity, (2) widows' annuity, (3) children's annuity, (4) disability in performance of duty, (5) disability not in performance of duty. Under the scheme the city pays approximately three times as much as the employee, policemen contributing 4.75 per cent of their salary, the public 13.5 per cent; total 18.25 per cent of salary. The cost of children's annuity is paid for entirely by the city, which also carries the burden as to disability in the performance of duty, the others being shared on various bases.

The special advantages of the system are that it does not bind employees to their jobs by placing too heavy a penalty on those who leave the service; and it encourages younger employees to remain in service. When an employee leaves the service, he is permitted to leave his money in the pension fund and to accept annuities upon reaching the appropriate age, even though he may not have been working for the city during the interim. The system is liberal in the case of present employees, in that under the plan the city will contribute to the present employees' account all that it would have put into the fund if the system had been in effect during the years that the employee has worked for the city.

As this sum will run into eight or ten millions of dollars, it is planned that the expense be carried over a period of thirty or forty years. The employee, however, will not be forced to contribute for his own past years of service at a higher rate than that established, in order to make up his side of the deficit, and employees already participating in the existing fund will receive for age and service annuities credits on all amounts which they have paid in to existing funds, plus 4 per cent interest.

The plan includes the latest thought on pensions, and some of the provisions have never been included in any previous pension system. Students of the plan and officials will watch its development with a great deal of interest, for Milwaukee has done some distinctive poineering.

MONARCH

The Tractor that Serves 365 Days a Year

You can keep your streets and roads free from snow in winter and without ruts in summer by motorizing your snow removal and road maintenance equipment with a Monarch Industrial Tractor. These tractors, equipped with snow plows quickly open up your streets after the heaviest snow storm and pulling blade or elevating graders can maintain your roads or build new roads with the greatest economy. Write for our interesting booklet "Monarch Facts" describing the work of the Monarch tractor, an efficient all-season machine.

MONARCH TRACTORS INCORPORATED
WATERTOWN WISCONSIN

And in the Summer—

Power, simplicity and accessibility are qualities built into Monarch Industrial Tractors, which insure their continuous and consistent operation under the blazing sun of summer as well as in the extreme cold of winter.

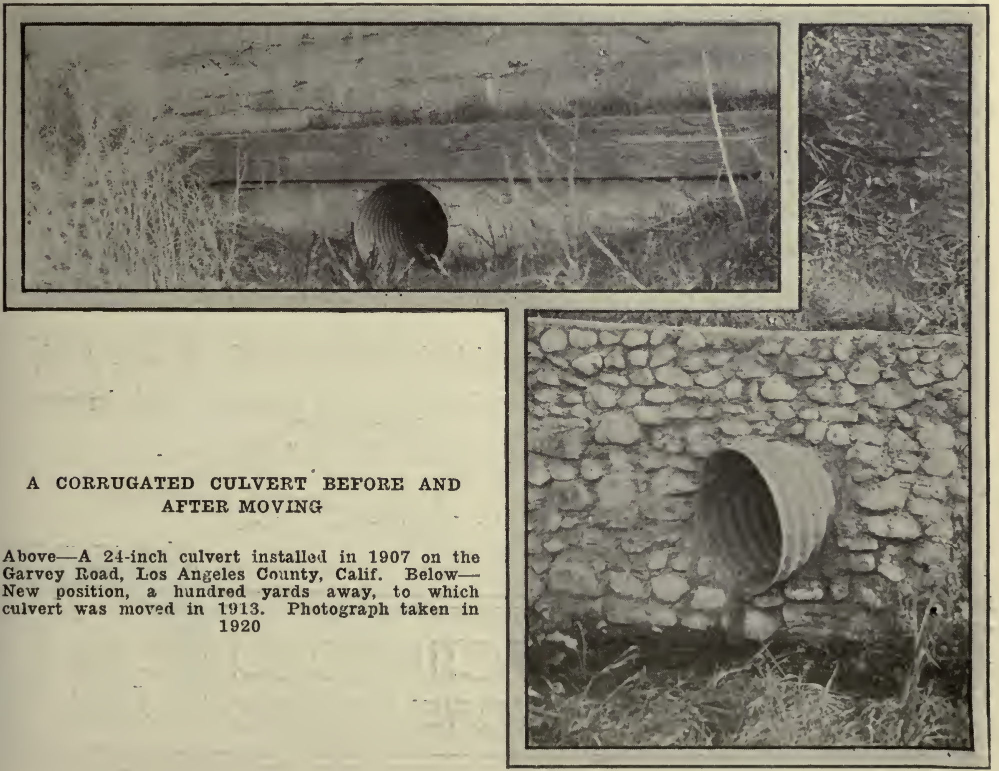
Solving the Culvert Problem in the Land of Seasonal Rains

IN a land of seasonal rainfall, the drainage engineer and the road builder are confronted with a grave problem that is generally not met with in a country where the rainfall is more evenly distributed throughout the year. Along the Atlantic coast, where the average yearly rainfall is between 50 and 65 inches, the drainage question is not as acute as on the Pacific coast or in the country west of the Rocky Mountains, where the average precipitation varies from 12 to 25 inches per annum.

This seeming paradox, where the country with one-fifth to one-half the rainfall presents greater difficulties in drainage than the section of great precipitation, is due to two causes. The first and most important is that in a section of the country subject to seasonal rainfall, the smaller amount of precipitation comes over a comparatively short period in the form of heavy rains lasting sometimes weeks, followed by months of cloudless weather. The second cause for this drainage problem is that the soil is more or less impervious in the country of seasonal rains, and precipitation, instead of seeping into the soil, fills the arroyos and canyons, which otherwise are dry for ten months of the year, and goes roaring down the valleys, washing out roads, bridges and railroad embankments.

The highway engineer of the western and southwestern states, therefore, must plan his roads and drainage structures with care, in order to handle this excess seasonal run-off. Washouts cannot always be prevented, as was demonstrated the past season in California when unprecedented heavy rains and freak snow-storms, hitherto unknown, caused enormous damage.

In a report sent out by an automobile club of Southern California, it is pointed out that a bitter storm lesson has been

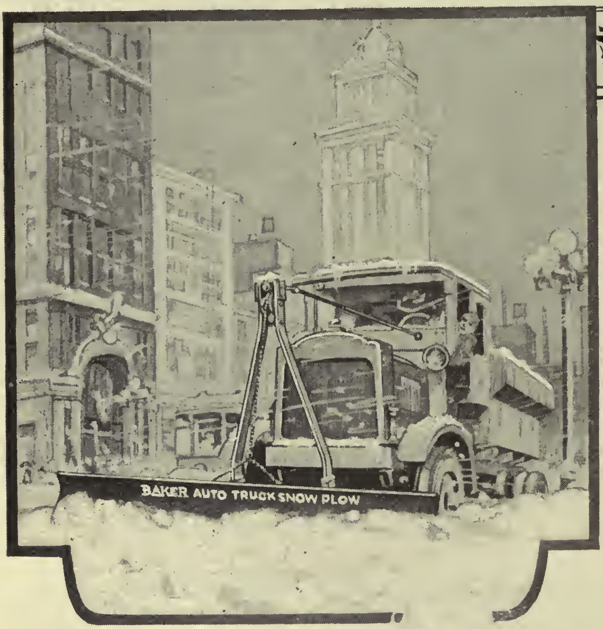


A CORRUGATED CULVERT BEFORE AND AFTER MOVING

Above—A 24-inch culvert installed in 1907 on the Garvey Road, Los Angeles County, Calif. Below—New position, a hundred yards away, to which culvert was moved in 1913. Photograph taken in 1920

Write for Illustrated Catalog on

BAKER *Snow Moving Equipment*


BAKER AUTO TRUCK SNOW PLOW

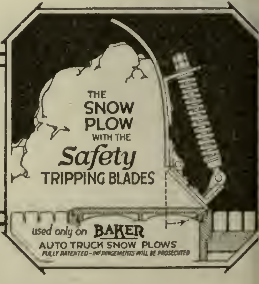
IT show various tractors, trucks and horse-drawn models as used in State Highway, City, Country, Park, Cemetery, University and large Industrial snow clearing work. For 15 years BAKER Equipment has been considered standard and foremost.

Baker Auto Truck Snow Plow, as illustrated here, provides an efficiency, an economy unlike that of any other for it universally fits all standard motor trucks, old or new, without drilling or changing front end construction.

The only snow moving device with the patent sectional safety tripping blades. Prevents shock or injury to the plow or truck in passing over manholes or other irregularities on pavements.

Write for descriptive literature and prices.

The **BAKER** MANUFACTURING CO.
503 Stanford Avenue, SPRINGFIELD, ILLINOIS



learned by thousands of tourists in Southern California during the recent rains.

It is practically impossible for the engineers to foretell the vagaries of the weather in a land of seasonal rainfall, but in the past few years great strides have been made toward minimizing the effect of washouts, through the use of corrugated iron culverts. These culverts—though they may be washed out by freshets and floods—unlike bridges, concrete culverts and other types of construction, are not a total loss, and they can be quickly reinstalled without loss of time and without expensive skilled labor. There are no forms to make, no waiting for roads to become passable for heavy mixing machinery, no tie-up of traffic until the cement "sets." Numerous cases are recorded where a corrugated iron culvert has been washed out, carried back to its place by a single man and reinstalled in a few hours.

The accompanying illustration shows the same culvert installed in two different places. It was first installed 15 years ago by County Supervisor L. L. Page, of Los Angeles County, under the Garvey Road near Alhambra, as shown at the left. It was afterwards removed to give place to a larger waterway and reinstalled on the same road. It is still giving good service, as shown at the right.

This is but one of the many instances showing the extreme adaptability of corrugated iron culverts for drainage purposes in a country of seasonal rainfall, where freshets and floods cause washouts. Whether removed by the forces of nature or the more considerate hand of man, their usefulness is not destroyed. Removability and the facility for quick reinstallation are factors which make for a high rescue value in the use of this type of drainage structure.

Flexible Type Roads

FLEXIBLE or semi-flexible types of road construction predominate in our country roads. If we consider the total mileage of state, county and municipal highways of a grade higher than gravel and macadam construction, considerably more than 50 per cent may be so classed. By reducing all yardage to a basis of 16 feet width, we estimate that at least 45 per cent of the mileage of the higher types of pavement are of the hot-mixed asphalt types. The latest available information indicates that in 1921 the total area of asphalt pavement constructed approximated 68,000,000 square yards, which was greater than for any other type. Most of the stone block pavements constructed that year were filled with bituminous material, and about 60 per cent of the brick pavements were similarly filled.

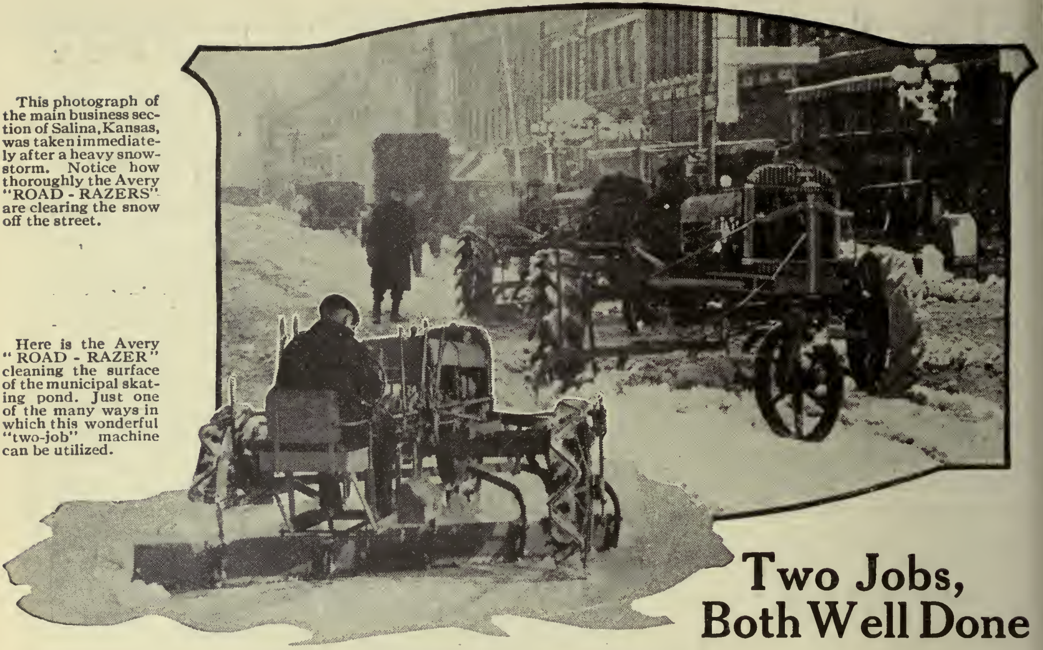
—*Prevost Hubbard, Chemical Engineer.*

General Contract Best for Municipal Building Construction

THE advantages of letting one contract for all parts of a building to a single general contractor,, thus centering responsibility, was recently explained by G. W. Buchholz, General Secretary, the Associated General Contractors of America, in a letter to the Chairman of the Building Committee, in charge of a memorial school, who reserved the right to sublet any part of the work. Mr. Buchholz wrote as follows:

"The awarding of separate contracts for the several portions of the work to different contractors is not often practised, and where tried has usually proved unsatisfactory and uneconomical. The reason advanced for the application of this policy is that it is more economical. Experience has shown that that is not the case. While the sum total of the separate contracts often amounts to less than the lump sum of the general contractor, the final and ultimate cost of the structure is greater, owing to the great number of extras necessary to correlate the work of the several separate contractors. The project very often suffers on account of the lack of harmony, if not open hostility, between the subcontractors.

"General contractors of responsibility and reputation are disinclined to compete where the proper coordination of the project is outside their control. Owners, therefore, lose the benefits of high-class competition."



This photograph of the main business section of Salina, Kansas, was taken immediately after a heavy snowstorm. Notice how thoroughly the Avery "ROAD-RAZERS" are clearing the snow off the street.

Here is the Avery "ROAD-RAZER" cleaning the surface of the municipal skating pond. Just one of the many ways in which this wonderful "two-job" machine can be utilized.

Two Jobs, Both Well Done

Removing Snow—Maintaining Unpaved Roads and Streets

THINK of a machine you can keep busy all year 'round, shaving the roughest roads and streets smooth—doing more, faster and better work at lower cost than has ever been possible with any other method—then when snow fills your streets, removing it for you quickly, easily and at low cost. That's the Avery One-Man "Road-Razer"—the most successful machine ever designed for country road and unpaved street maintenance work.

Mr. L. P. Alber, Commissioner of Public Improvements, Great Bend, Kansas, writes: "Your representative dropped in here during our big snow last year and got the "Razer" out and went to work showing us how to clean snow off our streets. The machine did the best job of cleaning off snow from the streets that we ever saw done by any machine. We bought it and as soon as the snow went off, we put it right to work smoothing up the streets and it does an elegant job. Our man had no trouble at all in learning the operation of same. We are highly pleased with it."

Mr. Ed. Buchanan, Street Commissioner of Salina, Kansas, writes: "On Nov. 23, I wrote you in regard to how well we liked our Avery Road-Razer for working dirt streets. Now, we have found another use for it, cleaning snow off our streets. We find it a great machine for cleaning off the snow. It does it so nice and clean that the streets are dry in a short time. One man can clean off miles of streets in a day after a heavy snow at a very little expense. It's the best snow machine we ever saw."

Every one interested in public improvement should study the remarkable work of this machine. It has really created a sensation wherever it has been introduced. One man operates it—turns the machine in its tracks, or backs up at will—and raises or lowers the long, flexible, three-section blade to fit and shape any crown or surface of the road.

Sold on approval, subject to demonstration and strongly guaranteed.

Build your roads with Avery Road Tractors and then keep them smooth and clear with Avery "Road-Razers." Write today for prices and complete information.

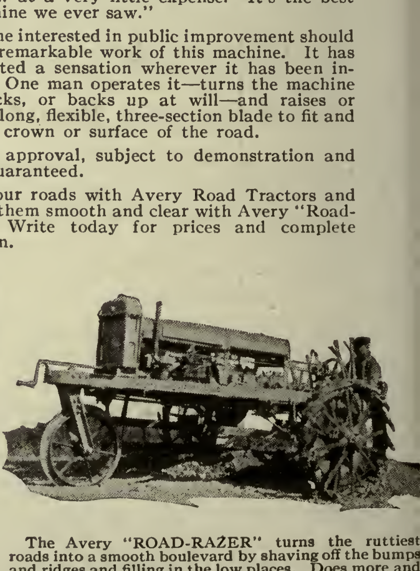
AVERY CO., 223 Iowa St., Peoria, Illinois

Branch Houses: **Madison, Fargo, Omaha, Minneapolis, Grand Forks, Sioux Falls, Aberdeen, Billings, Lincoln, Sidney, Neb., Des Moines, Indianapolis, Columbus, Kansas City, Wichita, Salina, Stuttgart and Sacramento**

Distributors: **Avery Company of Texas, Dallas, Amarillo and Beaumont, Texas**
Also Other Principal Machinery Centers

AVERY

Road-Building, Maintenance and Hauling Machinery



The Avery "ROAD-RAZER" turns the ruttiest roads into a smooth boulevard by shaving off the bumps and ridges and filling in the low places. Does more and better work than several men with teams and at less **than half the expense.**

The Financial Value of Health to a City

Low Disease Rates and Mortality Rates Make Good Publicity Material

WHEN a chamber of commerce secretary or the secretary of some other civic organization attends the annual meeting of a national society with the idea of securing the next annual convention for his own city, what are his arguments? Also, when he is in communication with a manufacturer who is looking for a new location, what facts concerning his city does he lay before his prospect? He lauds the hospitality of the city, the fine auditorium which has just been completed, the hotel and transportation facilities, the beauty of the city, and its extensive parks. How many secretaries dare to state the health of the city as an argument in its favor as a convention city or for the location of a new industry? Not many, yet conventions themselves have been the foci of epidemics, not perhaps recognized as such, for the cases were scattered throughout the country, although one or two typhoid epidemics were actually traced to conventions and the health conditions of the cities. It is a valuable asset if a publicity man can honestly state that his city is exceptionally free from disease and that its health department is so well administered that the city is included in the Registration Area by the Bureau of the Census.

This advantage applies even more forcibly in invitations to prospective builders of factories. Can you guarantee that your city has a lower case rate of communicable diseases than some city that offers slightly better transportation facilities and is therefore outbidding you? If so, you can prove that the loss to employers through absence from work due to illness may be actually greater per year than the saving in transportation costs.

The city of Dallas, Texas, proudly stated through its Chamber of Commerce when inviting the United States Government to locate a cantonment near Dallas, that the health of the whole district was superior to that of any other territory within several hundred miles. That was no mere idle boast, for they had the figures to prove it, and the backing of the United States Public Health Service.

State fairs are often a great source of income to a city or town through the advertising the community receives and also from the money expended in hotels and the business district. In one city the death rate from children's diseases always advanced greatly immediately after the fair. The Department of Health found undesirable and unhealthful conditions in the fair grounds and saw to it that they were corrected. There was talk of moving the fair elsewhere the following year, but through the activity of the Chamber of Commerce the fair was retained and the death rate for children's diseases actually fell for the two months after the fair. Without doubt this was due to the work of the health department in stopping every possible source of infection within the grounds.

Several large manufacturing houses have looked into the conditions of their workers, have improved them, and have found that, aside from the advertising they receive through the publicity given to their "humanitarian efforts," it has been a good investment in keeping employees at their benches more days per year.

Consider these facts from the purely financial point of view; put aside any fine theories that children should be given a chance in the world and that no one likes to be sick, except a few people who truly "enjoy ill health," and then consider the fact that it will actually pay in dollars and cents for any chamber of commerce or civic organization to cooperate with the health department of the city and help it to more effectively carry out its proper functions.

Publicity in New York

Dr. Royal S. Copeland, Health Commissioner, New York City, recently prepared a lengthy article for publication in *Greater New York,* the Bulletin of the Merchants Association of New York City. This article, a portion of which is quoted below, brings out the fact that the infant death rate in New York is low and the expectation of life has been increased by eleven years:

"Were you to ask the man in the street to

When Winter Comes

—AND STREETS AND ROADS ARE FILLED WITH SNOW

How are such highways to be quickly and economically opened for travel?

THERE IS BUT ONE ANSWER TO THIS IMPORTANT QUESTION: *BY USING*

Champion Snow Plows

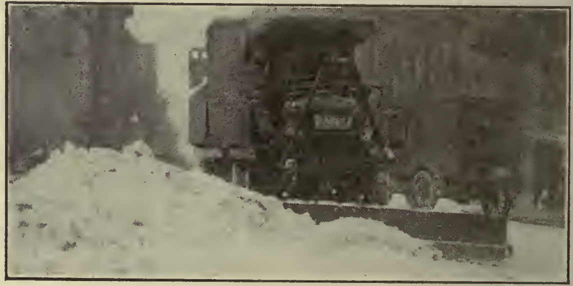
Champion Snow Plow Opening Danbury, Conn., Road

Champion Snow Plows are used and endorsed by Towns, Cities, Counties and State Highway Departments as the only practical means of freeing snow from streets and roads.

Easily and quickly attached to any standard motor truck or tractor.

The cost of the Champion Plow is insignificant when compared with the amount of work it will do. One of these plows will save its initial cost in clearing snow from highways after one storm.

Plows should be ordered now and they will then be on hand when needed. It is too late to get them after the snow comes.



Chamoion Snow Plow Clearing Snow from the Streets of a Large City

Catalogue furnished free on request. Write to-day for your copy. It will be furnished without obligation.

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The GOOD ROADS MACHINERY Co INC.
KENNETT SQUARE PENNSYLVANIA

SAN FRANCISCO, CAL.
CHICAGO, ILL.
KANSAS CITY, MO
PORTLAND, ORE

indicate to you the safest place on the face of the earth, the place freest from disease and where the length of life is greatest, there would come into his eyes a distant look. His imagination would carry him across the intervening miles to some place in the country where he was born. Perhaps his flight would take him to Canada, to some beautiful mountain resort in Europe, or to the isles of the sea.

"It is human nature to think the Elysian Fields are far from here. As a matter of fact, New York City, from a health standpoint, is the safest place upon the face of the earth. The death rate is lower here than in any other large city, and far lower than the death rate of any equal aggregation of people anywhere in the world.

"When you think about the babies, you think about the freedom of the woods and the ability to get milk from near-by herds. The average citizen, I am sure, would say that the expectation of life of an infant in the wonderful wildernesses of the province of Quebec is greater than in the city of New York. It staggers the imagination to take in the fact that the infant death rate in New York is less than half that of Quebec and lower than it is anywhere else, with the exception of an isolated community here and there where a few hundred persons may live.

The Infant Death Rate

"In 1891, out of every thousand babies born [in New York City], 241 died before they were a year old. Last year, 1921, out of every thousand babies born, only 71 died before they were a year old. . . .

"Almost the entire history of public health during the past half-century is told by New York's progress in the prevention of disease. Go back to 1871, and it is found that in that year out of every hundred thousand of the population, 27 died of malaria. Not alone do we never have a death from that disease now, but we never have a case in New York except when it is brought in from outside of our borders. This is a remarkable achievement when one considers that we have within the city limits 27,000 acres of marsh-land. To rid the city of malaria-carrying mosquitoes, it has been necessary to build 3,500 miles of ditches to drain the breeding areas. These ditches are kept clean and are kept oiled by the Health Department. The direct result is shown by the absence of malaria in this country."

Commissioner Copeland goes on to show the reduction in smallpox and the remarkable lengthening of the expectation of life in New York City, which has been increased from 42 to 53 years. He covers the watchfulness of the Health Department over the milk supply, the handling of food, and the reception of immigrants from Europe.

There are undoubtedly many other cities which have shown equal, if not greater, advances in sanitary conditions and the healthfulness of the community. These arguments are valuable beyond belief if backed up by dependable statistics and absolute proofs. They are one of the best advertisements any city can possess, even outweighing tremendous park areas and breathing spaces, which in themselves are worthless unless used by the community for health-producing recreation.

An Index to Health

Standards Developed by United States Bureau of Education Helpful in Determining Child's Health

ONE reason why we have been so backward in real health education is that we have had no reliable index to health. For many years we have known that infants were in a healthy condition if they made a certain gain in weight. If a baby does not gain, or loses in weight, we know that the child is not doing well. We now know that the same principle applies to older children as well. The United States Bureau of Education has accepted a table of right weight for boys and girls, as prepared by Dr. Thomas D. Wood. By consulting this it is possible to tell just how much any child of a given age and height ought to weigh and how much he should gain each month. Children who are underweight, especially 10 per cent or more below the standard, have physical defects or faulty habits of living. Sometimes they have both. The weight, therefore, becomes a test of the health work of the school. If children are entirely free to gain (for example have no diseased tonsils, etc.) they will improve in health if they lead the right sort of lives. The gain in weight rather than the acquisition of information, important as it may be, is therefore the real test of the child's advance and improvement in health.

BEFORE—Main St., Lena, Illinois, before "Tarvia-X" construction.

Mud Disappears Where Tarvia Enters!

AFTER—Main St., Lena, Illinois, after construction with "Tarvia-X"

THIS is an era of progress. And progress follows the line of least resistance. It can never reach the community that is marooned for weeks at a time in an ocean of hub-deep mud.

Today the entire nation is aware of these facts—is alive to the need for better roads. From farm and town alike, comes the demand for durable, economical, all-year highways.

The Age of Mud is giving way to the Age of Tarvia. For in the building of good roads Tarvia is playing a leading part. Road officials and taxpayers know from experience that Tarvia roads give the most for the least money.

Economy of first cost, and economy of maintenance brings smooth, dustless, mudless, all-year Tarvia roads within the financial reach of even the most humble community.

Tarvia is a coal-tar preparation for use in building new roads and repairing old ones. It reinforces the road surface and makes it not only mudless and dustless but waterproof, frost-proof and automobile-proof. Where existing macadam or gravel can be used as a base the cost of a traffic-proof Tarvia top is extremely low.

Tarvia

For Road Construction Repair and Maintenance

Illustrated booklets descriptive of the different methods of applying Tarvia, will be sent free on request.

New York
Detroit
Peoria
Youngstown
Baltimore
Chicago
New Orleans
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Toledo
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Philadelphia
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Duluth
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The City's Legal Rights and Duties

Information for City Attorneys and Other Municipal Officers, Summarizing Important Court Decisions and Legislation

Conducted by A. L. H. Street, Attorney at Law

An Ordinance Forbidding the Holding of Street Meetings Without Official Permission Sustained

In a decision upholding an ordinance of the city of Mt. Vernon, forbidding the holding of public meetings on the streets of the city without written permission from the mayor, it is decided that the regulation is not unconstitutional as an abridgment of the right of free speech. (People vs. Atwell, 133 Northeastern Reporter, 364.) Says the Court:

> "The Legislature had the constitutional right to confer upon the Common Council of the city of Mt. Vernon the power to enact ordinances regulating the use of public streets and the gathering or assembling of persons thereon. This power was expressly given. The ordinance passed clearly came within the provision of the charter and had the force and effect, within the corporate limits of the city, of a statute passed by the Legislature itself. . . . The ordinance passed in pursuance of the power thus conferred is valid, since it is a reasonable exercise of the police power over the public streets. It is not repugnant to the state or Federal Constitution, since it does not abridge the right of free speech or assemblage. Public streets are primarily for public travel. They are dedicated to the public for that purpose. They are thoroughfares intended for the use of the public to enable persons to go from one place to another. All acts which tend to hinder public travel thereon may be forbidden and prohibited. Any obstruction on the streets, whether permanent or temporary, may be declared unlawful.
>
> "It is quite beside the question to assert that the acts forbidden may be lawful in themselves, and could not in a general way be prohibited. On the streets the exercise of such rights is subordinate to the public right of travel and may be regulated or prohibited. Public meetings and assemblages held on the streets tend to obstruct the streets and destroy in a measure the very purpose for which they have been dedicated. It is too well settled by judicial decisions in both the state and Federal courts that a municipality may pass an ordinance making it unlawful to hold public meetings upon the public streets without a permit therefor to require discussion. . . .
>
> "The contention of the appellants that the ordinance prohibiting public speaking in the public streets abridges liberty of speech, and is, therefore, unconstitutional, is not sustained either by reason or authority. The answer to the contention is that the ordinance merely concerns the use of public streets and is not directed against or concerned with free speech generally. The people have many constitutional rights, the exercise of which on the public streets may be prohibited."

City Not Obligated to Pay for Requisitions Made by Its Citizens to Meet a General Emergency

While there was in progress in Atlanta a fire which endangered the city, and which invaded fifty or more blocks, rendering the city's fire equipment inadequate for the emergency, citizens obtained numerous fire extinguishers from plaintiff and never returned them. Plaintiff, claiming that there was no time to enter into a formal contract with the city officials, and that there was an implied contract by the city to pay for the extinguishers, sued it for compensation. Reliance was also placed on the fact that the chief of the fire department issued an order for delivery of the extinguishers by plaintiff to various citizens. Holding that plaintiff's petition failed to state a cause of action, the Georgia Court of Appeals said in the case of Pyrene Manufacturing Co. vs. City of Atlanta, 110 S. E. Rep., 408:

> "A request for fire extinguishers by citizens of Atlanta, to aid in saving their property during the conflagration, raised no implied promise or obligation upon the part of the city to pay for the fire extinguishers used by its citizens. The situation is not changed by the allegation that there existed a great emergency. In Wright v. Augusta, 78 Ga. 241, 6 Am. St. Rep. 256, and in Thompson v. Calhoun, 20 Ga. App. 296, 93 S. E. 72, and cases there cited, it was held that a municipal corporation is not liable for damages resulting from the negligence or inefficiency of its fire department or the insufficiency of the supply of water.
>
> "The alleged contract in the instant case was not binding upon the city, as it does not appear that the chief of the fire department was authorized to make it."

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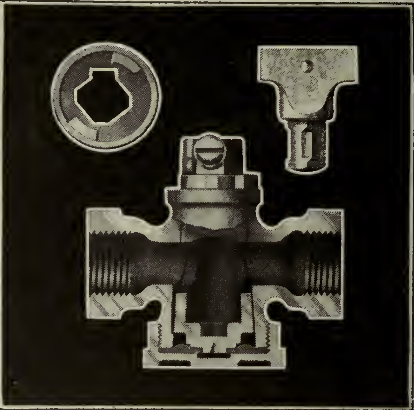

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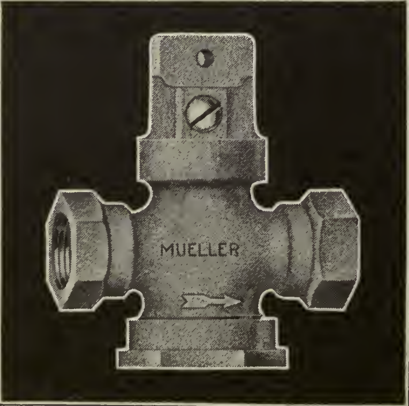

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Limitation upon the Power of a City to License Use of Its Streets

By A. L. H. Street

WE are asked to discuss legal phases of the right of a city to set apart portions of public streets "for the exclusive use of jitneys for terminal or parking facilities," particularly when considerable areas are so set apart.

An exhaustive examination of judicial precedents leads the law editor of THE AMERICAN CITY to a conclusion that the right must be determined with a view to the effect (1) upon the public and (2) upon abutting property owners, of permitting the use complained of. If the use can be said to be violative of the general public interest or unreasonably to interfere with abutting property owners' use of their property, it seems that it is beyond the power of the city to grant such privileges.

A high authority on municipal law has aptly observed that "unquestionably many permits to encroach on the street are granted by nearly every municipality of any considerable size which, if the question were litigated, would be held to be entirely beyond the power of the municipality." (3 McQuillan on Municipal Corporations, 2873.)

In a leading case bearing on the subject the New York Court of Appeals decided that it was beyond the power of New York City to license the keeping of a grocer's wagon in front of his store when not in use in moving goods to or from the store. (Cohen v. New York, 113 N. Y. 532.) What the Court says may be applied to the question before us:

"The primary use of a highway is for the purpose of permitting the passing and repassing of the public, and it is entitled to the unobstructed and uninterrupted use of the entire width of the highway for that purpose, under temporary exceptions as to deposits for building purposes, and to load and unload wagons, and receive and take away property for or in the interest of the owner of the adjoining premises, which it is not now necessary to more specifically enumerate. . . .

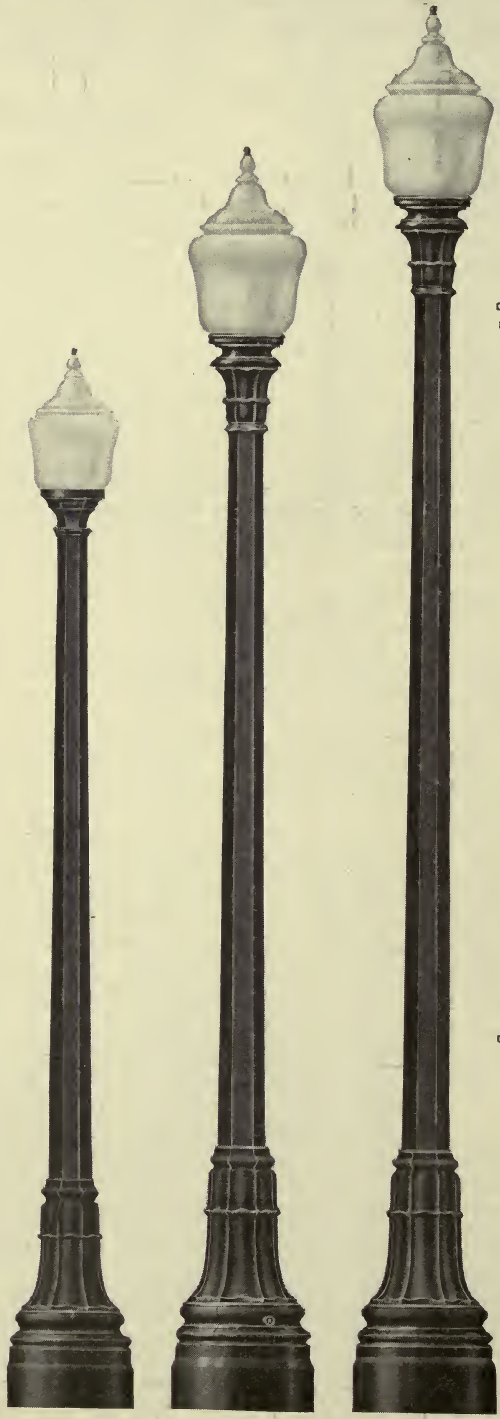
"It is no answer to the charge of nuisance that, even with the obstruction in the highway, there is still room for two or more wagons to pass, nor that the obstruction itself is not a fixture. If it be permanently, or even habitually, in the highway it is a nuisance. The highway may be a convenient place for the owner of carriages to keep them in, but the law, looking to the convenience of the greater number, prohibits any such use of the public streets. The old cases said the king's highway is not to be used as a stable yard, and a party cannot eke out the inconvenience of his own premises by taking in the public highway. . . .

"Familiar as the law is on this subject, it is too frequently disregarded or lost sight of. Permits are granted by common councils of cities, or other bodies, in which the power to grant them for some purposes is reposed, and they are granted for purposes in regard to which the body or board assuming to represent the city has no power whatever, and the permit confers no right upon the party who obtains it."

A pertinent summary of the law will be found in the very recent opinion of the Tennessee Supreme Court in the case of Stewart v. Illinois Central Railroad Company, 225 Southwestern Reporter, 1042. It was there held that the city of Memphis was without power to grant defendant railway company exclusive use of one-fourth of a street for about 800 feet. Finding that the public use of that portion of the street would be prevented, and holding that the city could not authorize this, the Court decided that the case must be distinguished from cases where telegraph and telephone companies, etc., are permitted to erect poles in streets, on the ground that the poles "interfere so little with the use of the streets by the public as to be of no consequence. If they were so erected as to seriously impair the use of the street, a case for judicial relief would arise."

In a case similar to that passed on by the Tennessee Court, the Washington Supreme Court said (113 Pacific Reporter, 576):

"If this power is vested in the council, then, by the mere passage of an ordinance to that effect, any street in any city . . . can be surrendered wholly to any railway company to the entire exclusion of ordinary highway travel, and its use as a public highway thus be absolutely destroyed. . . . The fact that only half of this avenue is here sought to be devoted to a purpose which prevents the use of that portion as a street is of no consequence in this



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inquiry, for this is a question of power. And the power which can thus take such portion can take all."

Elliott on Roads and Streets (2 Ed.) 645, says, in summarizing the established law of the country:

"Public highways belong from side to side and end to end to the public. . . . This is the only safe rule, for if one person can permanently use a highway for his own private purposes, so may all, and if it were left to the jury to determine in every case how far such an obstruction might encroach upon the way without being a nuisance, there would be no certainty in the law, and what was at first a matter of small consequence would soon become a burden, not only to adjoining owners, but to all the taxpayers and the traveling public as well. . . . It is well settled that the public are entitled not only to a free passage along the highway but to a free passage along any portion of it not in the actual use of some other traveler, and if this be true it necessarily follows that there can be no rightful permanent use of the way for private purposes."

Another pertinent decision is that handed down by the Missouri Supreme Court in the case of Schopp v. City of St. Louis, 22 Southwestern Reporter, 898. It was there decided that defendant could not lease portions of streets for use by vendors of produce. The Court said in part:

"An abutting property owner has the same right to the use of the street that the public have, and, in addition thereto, he has rights which are special to himself, as the right of ingress and egress, and this right is a property right which he may protect. . . . An obstruction in a street or highway may be both a public and a private nuisance, and in such cases the private citizen who is specially injured may have injunctive relief. . . .

"This power to regulate the use of streets is not confined to the regulation of travel thereon, but under it the city may allow gas, water, and sewer pipes to be laid therein . . . and may permit the erection and maintenance of telephone poles thereon. . . . All these uses are consistent with the uses for which streets are acquired or dedicated. But it does not follow from anything said . . . that the city may lease out portions of the streets for hucksters' stands and stalls."

As further bearing on the subject, we quote the following statements from 2 McQuillan on Municipal Corporations, 2913-2916:

"Unless the power is expressly delegated, a municipality has no power to permit lunch wagons to occupy the streets for a period of hours, and the same rule applies to other vendors of merchandise who sell from push-carts and the like near the sidewalk in the driveway. . . .

"'A certain use of the streets by carriages, either in front of hotels, clubs, theaters, churches and similar buildings, is a legitimate use of the streets as such,' and when they are occupied temporarily and reasonably by licensed cabmen or chauffeurs or by private carriages or automobiles, the municipality has no right to interfere, 'unless such occupation becomes so clearly and unmistakably annoying and continuous as to constitute an occupation which the law would regard as a nuisance.'

". . . A municipality cannot, according to the weight of authority, permit the use of a part of a street for a hack stand as against the objections of the owner of the property in front of which the stand is located, where it interferes with his access to his premises or other rights as an abutter."

On the Calendar of Conventions

SEPTEMBER 12-15.—NEW BEDFORD, MASS.
New England Water Works Association. Annual convention. Secretary, Frank J. Gifford, 715 Tremont Temple, Boston, Mass.

SEPTEMBER 18-21.—OMAHA, NEBR.
Association of American Cemetery Superintendents. Secretary, W. B. Jones, Highwood Cemetery, Pittsburgh, Pa.

SEPTEMBER 18-23.—PALO ALTO, CALIF.
Western Summer School of Community Leadership. Address: Mrs. C. H. A. Simmons, Registrar, American City Bureau, Merchants' Exchange Building, San Francisco, Calif.

SEPTEMBER 19-23.—PALO ALTO, CALIF.
League of California Municipalities. Annual convention. Executive Secretary, William J. Locke, Pacific Building, San Francisco, Calif.

SEPTEMBER 18-22.—MINNEAPOLIS, MINN.
National Tax Association. Annual conference. Secretary, Alfred E. Holcomb, 195 Broadway, New York, N. Y.

SEPTEMBER 21-22.—OWEN SOUND, ONT.
Ontario Associated Boards of Trade and Chambers of Commerce. Annual meeting. Secretary, F. G. Morley, Toronto, Ont.

SEPTEMBER 25-28.—HOT SPRINGS, ARK.
Southwest Water Works Association. Annual convention. Secretary, E. L. Fulkerson, 617 Washington Street, Waco, Tex.

OCTOBER 1-6.—CLEVELAND, OHIO.
American Society for Municipal Improvements. Annual convention. Secretary, Charles Carroll Brown, P. O. Box 234, St. Petersburg, Fla.

OCTOBER 2-3.—CLEVELAND, OHIO.
Ohio State Conference on City Planning. Annual conference. Secretary, Charlotte Rumbold, 201 Chamber of Commerce Building, Cleveland, Ohio.

OCTOBER 5-7.—PULLMAN, WASH.
Washington Association of Comercial Organization Secretaries. Annual meeting. Secretary, Vaughn H. Clearman, Wenatchee, Wash.

OCTOBER 9.—HARRISBURG, PA.
Pennsylvania Commercial Secretaries Association. Annual meeting. Secretary-Treasurer, B. W. Grills, Chamber of Commerce, McKeesport, Pa.

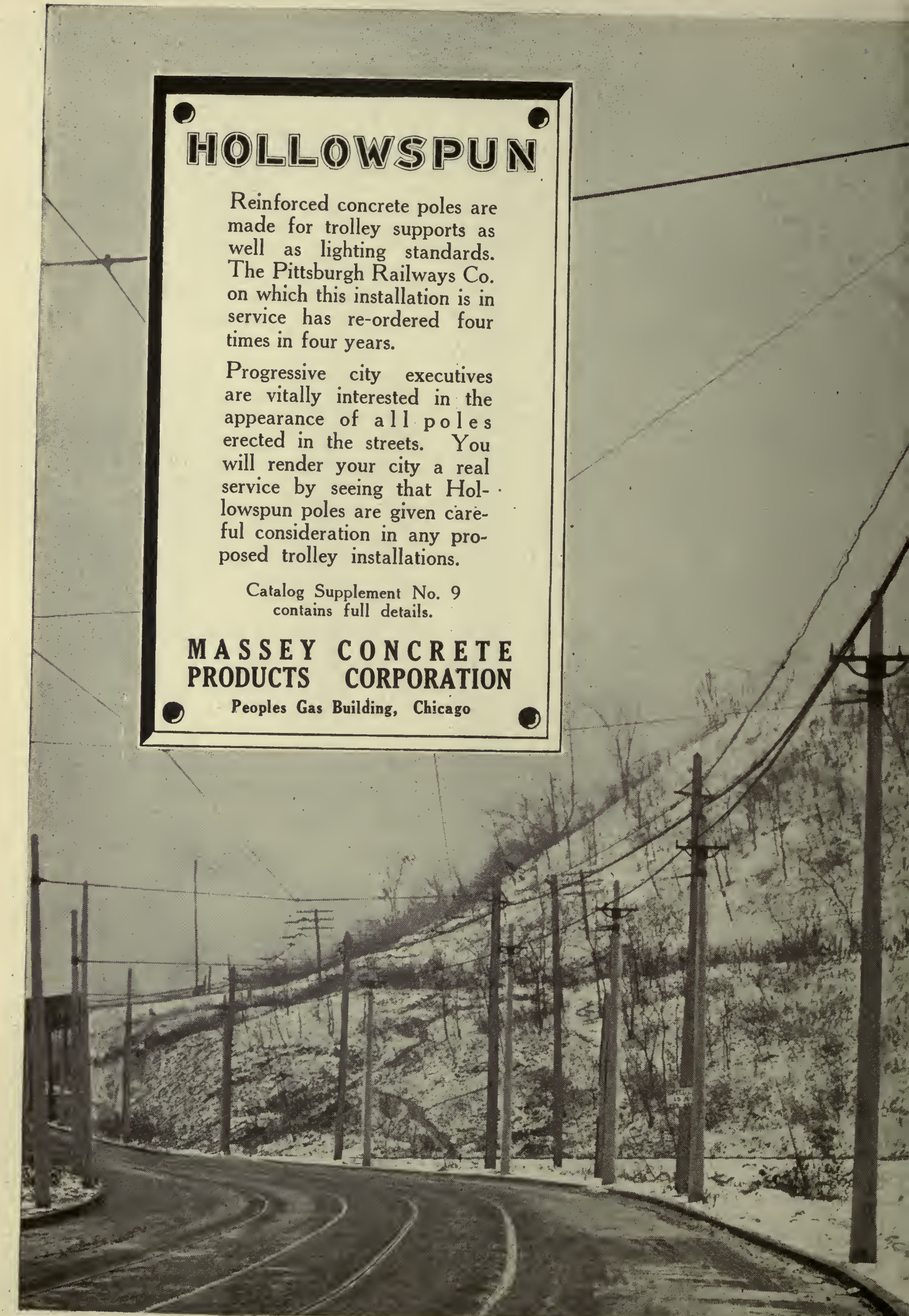
OCTOBER 9-12.—ATLANTIC CITY, N. J.
Playground and Recreation Association of America. Recreation congress. Secretary, H. S. Braucher, 1 Madison Avenue, New York, N. Y.

OCTOBER 16-19.—CLEVELAND, OHIO.
American Public Health Association. Annual meeting. Secretary, A. W. Hedrich, 370 Seventh Avenue, New York, N. Y.

OCTOBER 17-19.—PITTSBURG, KANS.
League of Kansas Municipalities. Annual convention. Secretary, John G. Stutz, University of Kansas, Lawrence, Kans.

OCTOBER 23-25.—DETROIT, MICH.
National Association of Commercial Organization Secretaries. Annual meeting. Secretary-Treasurer, John E. Northway, Hamilton, Ohio.

NOVEMBER 23-25.—PHILADELPHIA, PA.
National Municipal League. Annual meeting. Secretary, H. W. Dodds, 261 Broadway, New York, N. Y.



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COOPERATIVE CITIZENSHIP IN DELAWARE

Report to the Annual Meeting of the Service Citizens of Delaware, May 12, 1922, by Joseph H. Odell, Director. A most interesting and well-illustrated review of the work of this organization in supplementing and assisting the functions of the State Board of Education. 79 pp. "To the uttermost of our ability we have kept our activities free from sectarianism, party politics and the transient fads of social and industrial groups." (Apply to the Director, 8124 Du Pont Building, Wilmington, Del.)

STANDARDIZING SALARIES

Setting forth, in 8 pages, a method of developing standard salaries and wages in order to prevent political favoritism and discrimination in the rewarding of public service. Prepared by J. B. Probst, Chief Examiner, Civil Service Bureau, St. Paul, Minn. June, 1922. Illustrated by a graph showing what took place in St. Paul from August, 1919, to April, 1920, during which time the City Council preferred to exercise its salary-fixing prerogative according to its own discretion. (Apply to Mr. Probst.)

INDIANA WOODLANDS AND THEIR MANAGEMENT

Bulletin No. 5, published by the Division of Forestry, of the Department of Conservation. Sections in this pamphlet are devoted to the value of a forest to a farm, location of woodlands, types of Indiana forests, and the species they should contain under proper management. A discussion of the various species recommended for Indiana, with copious notes on each species follows. Discussions of cutting and other details of management, such as the effect of grazing on woodlands are also included. The few well-chosen illustrations add to the value of the pamphlet. 22 pp. (Apply to Charles C. Dean, State Forester, Department of Conservation, Indianapolis, Ind.)

PREPARATION AND USES OF TAR AND ITS SIMPLE CRUDE DERIVATIVES

This report by W. W. Odell was prepared under a cooperative agreement between the Bureau of Mines, the Illinois State Geological Survey and the University of Illinois. Among the subjects covered are sources and properties of tar, distillation, uses of tar and its various derivatives. Numerous tables and illustrations are included. 84 pp. (Apply to the Government Printing Office, Washington, D. C., Technical Paper, No. 268.)

A HIGH SCHOOL SOCIAL CENTER

A history and description of the social and recreation work of the La Salle-Peru Township High School. A brief historical summary with a survey of the three cities of La Salle, Peru and Oglesby, the opening and growth of the social center, the building and equipment, the various activities, and attendance figures, make this a valuable pamphlet for all who are interested in social center work. 46 pp. (Apply to Board of Education, La Salle, Ill.)

THE CENTRAL COUNCIL OF SOCIAL AGENCIES

A revised edition of the manual by Francis H. McLean, Field Director, American Association for Organizing Family Social Work, published by the Association, 130 E. 22nd street, New York, 1921. The character and purpose of a central councili, the technique of initial organization, what agencies should be admitted, the philosophy and methods of work are discussed. A record of actual accomplishments of some central councils is given. 52 pp. $.75. (Apply to the Association.)

HOUSING IN PHILADELPHIA

A synopsis of housing progress during the preceding decade, combined with an annual report of the year 1921. The pamphlet, which is illustrated and contains 52 pages, discusses the Senate Committee's investigation of housing, the gains of a decade, sanitary progress during 1921, present sanitary needs, a legislative program, the need for zoning, the results of a vacant-house survey, and a rent survey, and the tendency of dwelling construction in the city. Numerous graphs add considerably to the permanent value of the pamphlet. 52 pp. (Apply to the Philadelphia Housing Association, 130 South 15th street, Philadelphia, Pa.)

A SURVEY OF THE BONDED DEBT OF MINNEAPOLIS

The Minneapolic Civic and Commerce Association, through its Bureau of Municipal Research, recently issued a fifty-page mimeographed report on the bonded debt and the operation of the sinking fund in Minneapolis. It includes the history of the Minneapolis debt and sinking fund, sinking fund requirements, modern tendencies in municipal finance, proposals for the future, and a record of Minneapolis bonds. Numerous tables are given. (Apply to the Minneapolis Civic and Commerce Association.)

PROCEEDINGS OF THE AMERICAN SOCIETY FOR MUNICIPAL IMPROVEMENTS, 1921 Convention

Official Proceedings of the American Society for Municipal Improvements, Charles Carroll Brown, St. Petersburg, Florida, Secretary. Convention held at Baltimore, Maryland, October 24-28, 1921. A 640-page volume of valuable material on municipal administration, construction and improvement, covering particularly street lightiing, public markets, water supply, sewerage and sewage disposal, city parks, zoning, street paving and maintenance, subways, ports, snow removal, and school problems.

THE PROHIBITION QUESTION

This one hundred-page pamphlet discusses prohibition from the economic and moral standpoint. It gives the views of hundreds of leading men of affairs, manufacturers of iron and steel, cotton and other products, bankers, lawyers, college and university officials, as expressed in letters to the Manufacturers' Record in reply to a questionnaire on the subject. (Apply to the Manufacturers' Record Publishing Company, Baltimore, Md.) $.50.

ZONING FOR CITIES AND TOWNS

Bulletin No. 52 of the Iowa State College of Agriculture and Mechanic Arts is devoted to an article on "Zoning for Cities and Towns," by Rolland S. Wallis, Municipal Engineer. An excellent summary of the advantages of zoning is included. 16 pp. (Apply to Engineering Extension Department, Iowa State College, Ames, Iowa.)

THE CLEVELAND ZONE PLAN

A report of the Committee on City Plan to the Cleveland Chamber of Commerce, June 14, 1922. It covers the substance of zoning, zoning in other communities, a discussion of the Cleveland zoning ordinance, principles employed in the preparation of the Cleveland zone plan, Cleveland's planning problem, and, in an appendix, gives the zone ordinance as introduced, and maps showing the use, height and area districts. 16 pp. and map. (Apply to the Cleveland Chamber of Commerce, Cleveland, Ohio.)

STREET LIGHTING DISTRIBUTION SYSTEM

By E. B. Meyer, Assistant Chief Engineer, Public Service Electric Company, Newark, N. J. Reprint from the **General Electric Review** of August, 1921. 8 quarto pp. Views and diagrams. Showing various types of installations to meet different conditions, and their respective advantages. (Apply to the Publication Bureau, General Electric Company, Schenectady, N. Y.)

SCHOOLS IN SMALL CITIES

"Administration of Schools in the Smaller Cities." By W. S. Deffenbaugh. Bulletin, 1922, No. 2, United States Bureau of Education. 1922. 75 pp. Covering with great detail the organization and duties of school boards, the relations, powers, duties, qualifications and tenure of the superintendent, and similar points regarding the teachers, including their rating and salaries. Supervision of instruction, grading and promotion of pupils, accounting, records and reports, are also dealt with. Many tables. (Price, 10 cents. Apply to the Government Printing Office, Washington, D. C.)

NEW YORK STATE WATERWAYS

Twelfth Annual Report of the New York State Waterways Association, including the Proceedings of the Twelfth Annual Convention, held in Albany, N. Y., under the auspices of the Albany Chamber of Commerce, October 27-28, 1921. 104 pp. (Apply to George Clinton. Jr., Secretary of the Association, 1012 Prudential Building, Buffalo, N. Y.)

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STREET LIGHTING AND PUBLIC SAFETY

By Earl A. Anderson, Illuminating Engineering Staff, National Lamp Works of General Electric Company, Cleveland, Ohio. Reprinted from the Proceedings of the American Society for Municipal Improvements, 1921. Published as Bulletin 46 (May 5, 1922) of the Engineering Department of the Works. 22 pp. Table, diagrams, views. Presenting facts regarding the service of street lighting in preventing accidents and crime, and in contributing to the comfort, convenience and commercial advantage of cities and towns. (Apply to National Lamp Works of General Electric Company, Nela Park, Cleveland, Ohio.)

CRIMINAL JUSTICE IN CLEVELAND

''An Outline of the Cleveland Crime Survey,'' by Raymond Moley, Director of the Cleveland Foundation, which publishes the pamphlet. 66 pp. Diagrams. A digest of the survey itself, which was conducted during the first half of 1921. New interpretations and arrangements have been made by the author in this summary. ''The survey shows that Cleveland's plight was............rooted in conditions due to the great increase in the complexity of the problem of law enforcement, coupled with the persistent survival of antiquated methods and institutions.'' (Apply to the Cleveland Foundation.)

ONTARIO HIGHWAYS

Annual Report of the Department of Public Highways, Ontario, 1920. Published 1922. 70 pp. Numerous views showing the improvement of the highways. Several maps, one a double-page insert, showing in perspective of relief the highways, waterways and shore lines of Ontario. Among the topics included are road costs, dragging the roads, motor vehicle registration, motor car accidents, traffic law enforcement, and afforestation. (Apply to W. A. McLean, Deputy Minister of Highways, Parliament Buildings, Toronto, Ont.)

PLANNING FOR WORCESTER, MASS.

Preliminary Report on a City Plan. Prepared by the Technical Advisory Corporation, 132 Nassau Street, New York, N. Y., under the direction of the Citizens' City Plan Committee of Worcester. Published June 4, 1922, as the **Sunday Telegram Magazine** of Worcester. 32 newspaper pp. Illustrated with many views, maps and diagrams. This is the Plan for a Plan—an assembling of facts, and analysis of them, with the purpose of arriving at a concrete solution of every phase of the City Plan. (Apply to the Citizens' City Plan Committee of Worcester, Mass.)

COST OF LAYING CAST IRON PIPE

A diagram combining compilations from actual costs of laying cast iron pipe in ten water-works plants. The information was obtained in making appraisals for five water companies and five municipalities, by Dabney H. Maury, consulting engineer, Monadnock Block, Chicago, Ill. The diagram was prepared by F. G. Gordon, Mr. Maury's principal assistant. The figures here presented have been found on the average to check closely with costs in a number of other cities where conditions were not abnormal. (Apply to Mr. Maury.)

BUFFALO HOSPITALS

Report to the Citizens Committee on an Investigation of the Department of Hospitals and Dispensaries of Buffalo, N. Y., by Haven Emerson, M. D., New York, N. Y. April 28, 1922. Associated with Dr Emerson in this study were Walter M. Brunet, M. D., and Miss Gertrude E. Hodgman, R. N. 36 pp Diagrams and map. ''If it be found practicable to follow the recommendations offered, Buffalo should in the near future be able to point to a public policy and a practical administration of care of the sick second to none among the cities of this country.'' (Apply to the Citizens Committee of Buffalo.)

SEWAGE TREATMENT

''A Guide to the Operation of Sewage Treatment Plants,'' by Burns & McDonnell Engineering Company, consulting engineers, Kansas City, Mo. A pocket-size 8-page manual presenting the principles by which the efficient treatment of sewage may be accomplished (Apply to the authors.)

RECENT HOUSING PUBLICATIONS

The July, 1922, of **Housing Betterment** contains a list, of 36 pages, of recent books and reports on housing and town planning. It includes material received since September 1921. (Apply to the National Housing Association, 105 East 22nd Street, New York, N. Y.)

WATER ANALYSIS

''Bacteria Fermenting Lactose and Their Significance in Water Analysis,'' by Max Levine. Bulletin 62 of the Engineering Experiment Station of the Iowa State College of Agriculture and Mechanic Arts. December 28, 1921. 127 pp. Many tables and diagrams. (Apply to the Engineering Experiment Station, Ames, Iowa.)

SHANGHAI'S MUNICIPAL REPORT

Report of the Shanghai Municipal Council for the Year 1921 and Budget for the Year 1922. A volume of over 500 pages, 8½ x 12¾ inches, with many views, tables and diagrams. Covering with great detail all phases of the organized government of the British section of Shanghai. (Apply to the Council.)

FIRE PREVENTION IN IDAHO

Proceedings of the Fourth and Fifth Annual Convention of the Idaho Firemen's Association, together with the papers read. Held, respectively, at Idaho Falls, Ida., September 24-25, 1920 and Jerome, Ida., September 20-22, 1921. 64 pp. (Apply to L. B. Redford, Secretary of the Association, Rupert, Idaho.)

SOCIAL RESOURCES IN COLUMBUS, OHIO

''Handbook of Social Resources.'' Published by the Columbus Chamber of Commerce, the Columbus Council of Social Agencies, and the Columbus Advisory Council. An up-to-date, practical summary of all organizations engaged in social service work in Columbus, including local agencies and those state-wide organizations that have offices in the city. (Apply to the Columbus Council of Social Agencies.)

FOREST FIRES

''Forest Fires—How to Fight Them.'' Bulletin 27 of the Department of Forestry of the Commonwealth of Pennsylvania. 1922. 18 pp. Illustrated. Emphasizing the individual responsibility for removing fire hazards, and containing very definite practical methods of fire preventon and extinction. (Apply to R. Y. Stuart, Commssioner of Forestry, Harrisburg, Pa.)

MILK INSPECTION

Report of the Milk Inspection Association of the Oranges (New Jersey) for the year 1921. 20 pp. Tables and graph. The year's work is pronounced most gratifying and satisfactory. (Apply to William B. Palmer, Executive Officer, Milk Inspection Association of the Oranges, Orange, N. J.)

Municipal Reports

WATERBURY, CONN.—First Annual Report of the Board of Park Commissioners, May, 1921, to May, 1922. (Apply to Thomas F. Moore, Secretary of the Board.)

TALLAHASSEE, FLA.—Second Annual Report of the City of Tallahassee Under Commission-Manager Form of Government, for the year ending March 1, 1922. (Apply to J. W. Greer, City Manager.)

MINNEAPOLIS, MINN.—Thirty-ninth Annual Report of the Board of Park Commissioners, 1921. (Apply Theodore Wirth, Superintendent of Parks.)

WALTHAM, MASS.—Third Inaugural Address of Hon. George R. Beal, Mayor, and Annual Reports for 1921. Fourth year under commission-manager form of government. (Apply to Henry F. Beal, City Manager.)

READY TO PICK CITIES FOR HEALTH DEMONSTRATION

Announcement has just been made of the qualifications required of the communities to be chosen for the first demonstration in the child health program formulated by the American Child Hygiene Association and the Child Health Organization of America, and financed by the Commonwealth Fund of Washington, D. C.

A similar child health program is now being carried on in Mansfield, Ohio, but three additional typical cities are to be selected for the new tests which will cover a period of five years. The general qualifications of the first city are that it should be from 15,000 to 25,000 population, with an infant mortality rating of approximately 100 per thousand of live births or greater. Detailed specifications of the program, and a questionnaire to be filled out by cities applying for consideration, may be obtained from Courtenay Dinwiddie, Executive Secretary of the Child Health Committee, 532 7th Avenue, N. W., Washington, D. C.

Lynn Police Motorized

LYNN, MASSACHUSETTS, believes that the best way to maintain law and order is to use modern crime-fighting equipment. So Lynn has seven Harley-Davidson Motorcycle officers scooting here, there and everywhere about the city. Seven reasons, undoubtedly, why Lynn taxpayers claim their city is one of the best policed communities in New England.

Lynn is but one of over 1,000 cities and towns that use Harley-Davidsons for police work. And wherever they are used, police officers and other officials say they wouldn't get along without them. For the Harley-Davidson has proved itself "America's Police Motorcycle"—unexcelled for dependability, durability and economy (50 miles for a dollar —gas, oil, tires and all—is its average).

Chief of Police of Lynn, Mass., says:

"We have been using Harley-Davidson Motorcycles since 1917 and they are standing up favorably and are giving excellent service. They are very economical to run and need very little repairs. We have used other makes in this Department and the Harley-Davidson is the only machine that I would recommend."

1923 models are now out—with reduced prices and ten big improvements. Write today for special Police Motorcycle literature. Or ask your dealer for demonstration.

HARLEY-DAVIDSON MOTOR CO.
MILWAUKEE WISCONSIN

Harley-Davidson
World's Champion Motorcycle

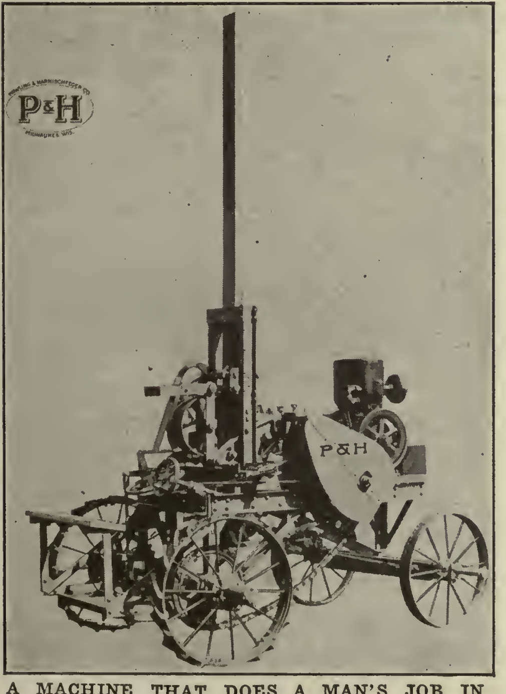
Methods, Materials and Appliances

News for City and County Engineers, City Managers, Water-Works Superintendents, City Controllers, Park Superintendents, Purchasing Agents, and Others Interested in the Economical Construction and Efficient Operation of Public Improvement Undertakings

Power Traction Tampers for Solidifying Trenches

Tamping by hand is very hard and tedious work, and it is a physical impossibility for a man to keep at it steadily. As a result, there is considerable soldiering on a tamping job, and costs run very high. In addition to costing a large sum of money, hand tamped ditches are unsatisfactory. They frequently settle badly, causing pavements to sink with them. This is a fruitful source of lawsuits between the city and public utilities. To meet this trouble, the Pawling & Harnischfeger Company, Milwaukee, Wis., has had on the market for a considerable number of years a power traction tamper. This machine is equipped with a tamping bar weighing 150 pounds that delivers 42 strokes per minute.

The machine can be adjusted to the width of the trench by means of sliding wheels. The tamping bar can be traversed left or right at the operator's will by means of a hand wheel while the machine is tamping, so as to cover a trench of maximum width of 30 inches. The machine is adjusted to the width of the trench by sliding the wheels, which are adjustable to widths between 58 and 76 inches. The standard depth to which this machine tamps is 7½ feet, but greater depths may be tamped by substituting a longer ram made of any hard wood. Power is transmitted to the rear wheels by means of chains. While the machine is tamping, it moves along at the rate of 6 feet per minute, backward or forward as desired. For travel, the machine has a road speed of 1 1-3 miles per hour.



A MACHINE THAT DOES A MAN'S JOB IN TRENCH TAMPING

There are numerous instances where these tampers have saved their owners large sums of money. In one instance a contractor had a job for which the engineer had specified that all the dirt, a very sticky clay, was to be removed by team and the ditch refilled with sand. A tamper was put on the job. The original clay was backfilled into the ditch and tamped in so solidly that the job was satisfactory to the engineer in charge. It is needless to say that the price of the tamper was saved many times over on this job.

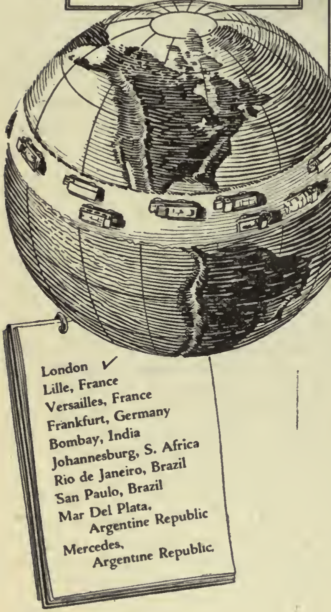
Breaking Up a Reinforced Concrete Venturi Vault

It was recently found necessary to remove the side walls and top of a large venturi vault and a section of the west wall of the filter building of the Cleveland, Ohio, filtration plant. A section of the west wall, 23 feet in length, 20 feet in depth and 24 inches thick, was removed. The wall was made of concrete, reinforced with ½- to ¾-inch steel rods, spaced 8 inches on centers. This made a very solid foundation which was difficult to remove. Three days were required to completely demolish the wall by the use of two CC-25 paving breakers made by the Ingersoll-Rand Company, 11 Broadway, New York City.

At the start, it was the intention of Charles H. McAllister, general manager of the Lake Erie Construction Company, which is doing the work for the city, to handle the work by hand, but he tried out one of the paving breakers and found it was much more economical and expeditious.

The paving breakers are automatic compressed-air-operated pick and chiseling machines. The machine is similar to a non-rotating hand hammer rock drill. It is light, very simple, and operated by one man when working downward. In this particular case, however, it was found advantageous to use two men to each machine. It required three days to completely demolish the west wall by

Thames — Victoria Embankment, London. Paved with Trinidad Lake Asphalt in 1906. Still in splendid condition.



Around the world on Native Lake Asphalt

Wherever you find good streets and good roads—from the Thames—Victoria Embankment, London, to the Avenida Central Rio de Janeiro— you will find Trinidad or Bermudez Asphalt pavements.

More than 200,000,000 square yards of native-lake asphalt paving— or 22,000 miles of 15-foot roadway—have been built since 1879. And they hold the world's record for long-life and low maintenance cost.

Created when the world was still young—sun-baked wind-swept and storm-beaten for ages—native-lake asphalt has been seasoned and toughened for long-lasting, economical service on modern highways.

Many Trinidad streets and Bermudez roads—from 20 to 30 years old—have been kept in splendid condition at a cost of *less than a cent per square yard per year.* Think of it!

Write at once for booklets describing these remarkable world-old materials—Trinidad and Bermudez Lake Asphalts

The Genasco Line includes asphaltic roofing, flooring, paints and allied protective products. Write for descriptive matter.

New York
Chicago
Pittsburgh

THE BARBER ASPHALT COMPANY
PHILADELPHIA

St. Louis
Kansas City
Atlanta
San Francisco

TRINIDAD AND BERMUDEZ
THE NATIVE LAKE ASPHALTS

TWO PAVING BREAKERS REMOVING CONCRETE FROM VENTURI VAULT OF THE CLEVELAND, OHIO, FILTRATION PLANT

the use of these paving breakers. They not only broke up the concrete into pieces large enough to be handled by one man, but with the aid of a cutting chisel they also cut out the steel reinforcing rods. These cutting chisels were similar to those used for asphalt, except that the edge was concave so that it would not slip off the bar.

The side walls of the Venturi vault were 12 inches in thickness, 51 feet long and 10 feet high, reinforced in the same way as the west wall of the filter building. These walls were removed in seven days by the use of the paving breakers. The roof of the Venturi vault, which was of the same dimensions as the sides, was removed in 3½ days. This work would have taken many more men and much longer time if hand methods had been used, and it would, of course, have been much more expensive.

Johnson Making Studies for Various Cities

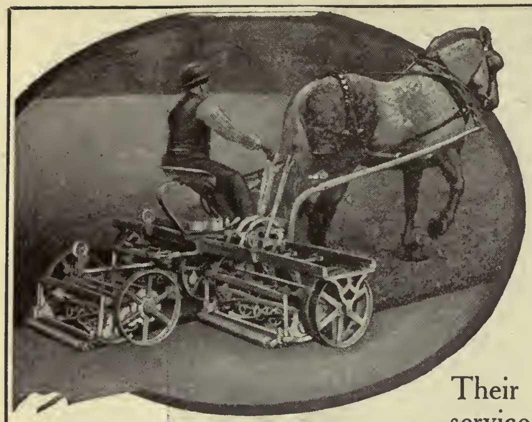
George A. Johnson, Consulting Engineer, 150 Nassau Street, New York City, has been retained by Trenton, N. J., to conduct preliminary studies, prepare plans and supervise the construction of the improved sewage disposal works for that city. He is also assisting the Metropolitan Utilities District of Omaha, Nebr., in the construction of the new 50,000,000-gallon water filtration plant at that city, and is acting as consulting engineer for the Department of Public Works, Boston, Mass., in connection with the study of the existing methods of garbage reduction in Boston. At present an exhaustive investigation is being made into the refuse collection service of the entire city.

A Fire Ordinance for Small Cities and Towns

During the last 15 years, ending with 1921, insurance paid in this country on account of fire losses amounted to $3,750,000,000. Including the direct losses not covered by insurance, the indirect losses due to the necessity of providing temporary living or business quarters and the losses due to divergence of business to competitors of the fire victims, the actual losses would probably amount to twice this sum, or roughly, $7,500,000,000, making a total yearly loss of around half a billion dollars. The actual insurance paid in 1921 was $333,000,000, an amount greater than any of the preceding 14 years. This sum would annually build over 3,300 school buildings costing $100,000 each, or three paved highways across the continent from New York to San Francisco.

Improper construction and combustible building materials are, of course, responsible for a greater part of this waste. Improper construction makes the start of many fires possible, while combustible material furnishes the fuel to feed the flames. In its effort to encourage the construction of better and more firesafe buildings, the Portland Cement Association, 111 West Washington Street, Chicago, Ill., recently issued a "Suggested Building Ordinance for Smaller Municipalities," with populations ranging from 5,000 to 25,000. According to the 1920 census, 1,199 cities in the United States fall within this category, but only 187 of these have building codes of any kind.

The suggested ordinance is intended primarily for cities not having a completely organized building department, but having available some



Pennsylvania TRIO; a time and labor saver for golf course, parks, large estates 86 in. swath.

Write for "Pennsylvania TRIO Book"

PENNSYLVANIA *Quality* LAWN MOWERS

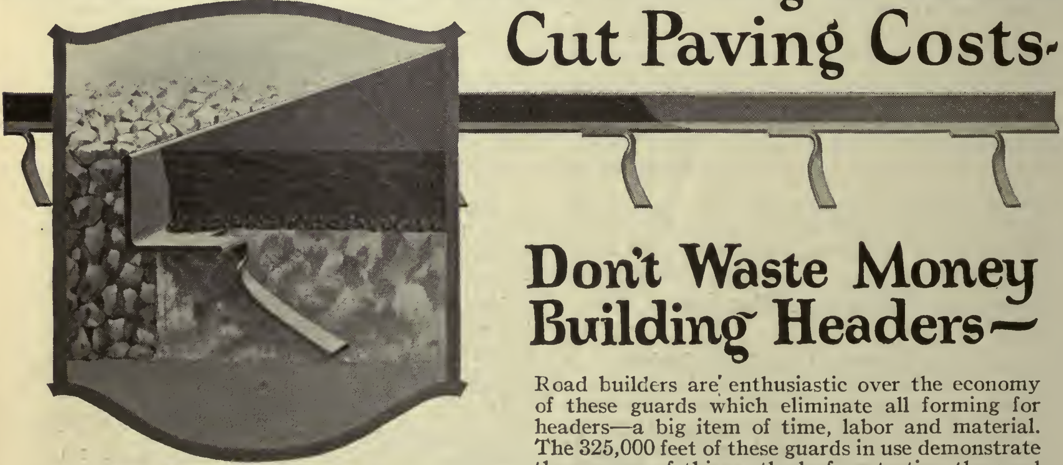
No matter what kind of a job they have been put up against, Pennsylvania Quality Mowers have more than met every requirement.

Their record of longest, most satisfactory service, of least upkeep cost and of greatest durability is unduplicated in lawn mower history.

Exclusive features such as self-sharpening, crucible, tool steel blades, automobile type ball bearings, selected material and specialized manufacturing processes assure the most satisfactory and the most economical service.

Pennsylvania Lawn Mower Works, Inc.
1615 North 23rd Street, Philadelphia

International Steel Paving Guards Cut Paving Costs-



Don't Waste Money Building Headers—

Road builders are enthusiastic over the economy of these guards which eliminate all forming for headers—a big item of time, labor and material. The 325,000 feet of these guards in use demonstrate the success of this method of protecting the road edge. They are built in various sizes and are adapted to all types of surface and base.

These guards are built of standard structural angle with inch-wide anchors twisted and bent like reinforcing bars. They save the surface and reinforce the base.

Every contractor should use these guards.

International Steel Tie Co., Cleveland, O.

official, such as a city engineer or a fire marshal who would be competent to enforce it. In many cases the chief of the fire department would be the logical man for this place, as he would have an organization at hand to enforce the code, although a city engineer with building construction experience might be more satisfactory as an all-round building inspector.

The suggested ordinance provides for the establishment of fire limits, within which the requirements for construction of buildings are considerably more rigid than in the areas outside the fire limits. The ordinance calls for good building construction without imposing burdensome conditions requiring undue expenditure of money. The aim is to permit the economical use of building material. Matters such as wall thicknesses and other construction requirements are based on recent tests and investigations, and are said to represent advanced thought in building construction.

Copies of the suggested ordinance can be secured by readers mentioning THE AMERICAN CITY and addressing the Portland Cement Association, 111 West Washington Street, Chicago, Ill. This organization's structural engineers will be pleased to assist building code committees in the solution of problems requiring special treatment.

Reinforced Concrete Pressure Pipe

Of late years the use of reinforced concrete pressure pipe on water-supply conduits has increased to a very marked extent, with such cities as Denver, Baltimore, Kansas City, Fort Worth, Dallas, Seattle, Cumberland, Norfolk, Winnipeg, Man., St. John, N.B., etc., having adopted it.

The success of reinforced concrete pipe is due to the development and perfection of methods of manufacture in securing the necessary density and in the perfection of the joints. It has been demonstrated that concrete expands and contracts very much the same as metal pipes, and the problem, therefore, was to provide for the expansion and contraction. This had to be taken care of in the joints, and necessitated the development of expansion joints. Different types of joints have been successfully used, one being a copper band which contained a folded portion and which would expand when the pipes tended to pull apart. More lately, lead joints have been introduced to successfully meet and overcome this condition.

One very interesting type of joint is that manufactured by the Lock Joint Pipe Company, Ampere, N. J., which is used on pipes 12 feet in length, in sizes up to 48 inches in diameter. In the ends of the pipes are molded machined cast iron rings, one forming the bell, the other the spigot, and so made that when the lead gasket is placed in the bell and the pipe is forced home, the lead joint is automatically calked and the lead lying between two machined faces allows the pipe to change its position without causing leakage.

Reinforced concrete water pipes have been in use for upwards of fifty years nad have given a very great degree of satisfaction. In France and Belgium, such pipes of large diameters have been used for about thirty years, totaling between 500 and 600 miles, without any failures having been recorded.

Well-made reinforced concrete pipes offer a number of advantages in that their initial cost is generally less than that of cast iron pipe, their carrying capacity is as great as that of any other type of pipe made, owing to the smoothness with which they can be made, and they are not subject to tuberculation such as often occurs in metal pipes. Up to the present time the use of reinforced concrete pressure pipe has been almost entirely limited to supply lines. It can now be furnished to withstand heads up to at least 300 feet.

Our Front Cover

We are indebted to A. H. Andrews, Executive Secretary, Board of Commerce, New Bedford, Mass., for the attractive photograph which appears on the front cover of this issue of THE AMERICAN CITY.

THIRTY-SIX INCH CONCRETE FORCE MAIN, NORFOLK, VA.

Meeting Municipal Haulage Problems *with* Garford Special Equipment

Combining dependability with *low cost ton mile* has given Garford an enviable position in the varied service of municipal departments.

Los Angeles uses the Garford fleet shown above with an estimated saving of $25,000.00 per year over the former methods of garbage and rubbish removal.

Fire Department, Police and Ambulance services present peculiar problems differing from other municipal hauling problems.

None can say that one department is more important than the other. The service to water-works—electrical or public works departments is vital in the conduct of municipal business.

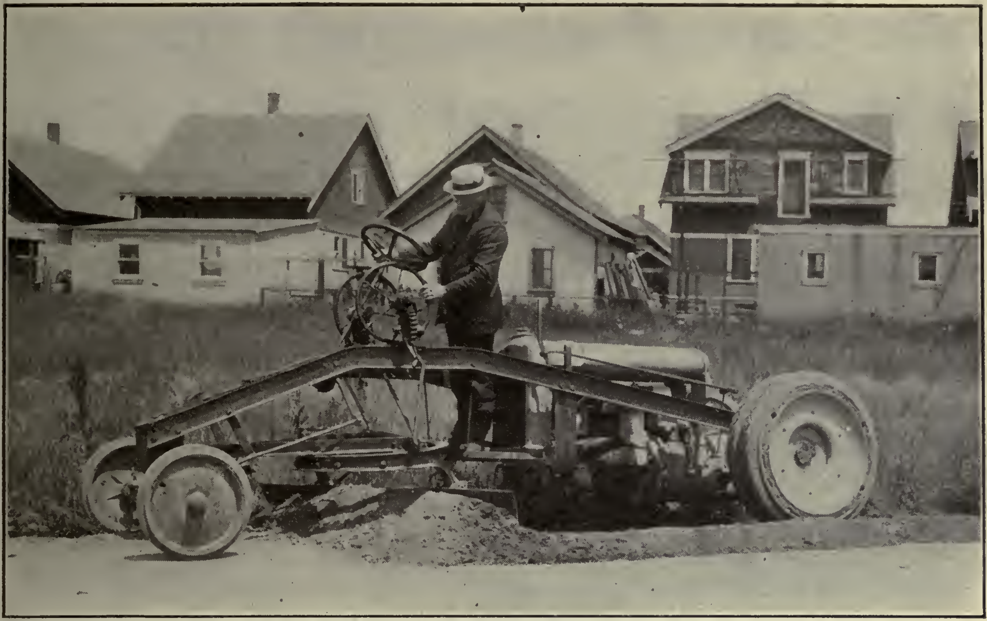
Garfords standing in municipal service is largely due to the fact that Garford engineers treat these varied municipal needs individually, matching chassis and equipment for the individual requirements of each unit.

Garford's sales and engineering staff will meet with any municipal department to outline equipment for any municipal service — to last longer and serve better.

The Garford Motor Truck Company, Lima, Ohio

GARFORD

RELIABLE TRANSPORTATION



OPERATING A COMPACT ONE-MAN GRADER

A Recent Development in One-Man Graders

A one-man power grader designed to meet the requirements of city street and county road maintenance and also for finishing work and light grading for contractors, has recently been developed by the Wehr Company, 533-545 Thirtieth street, Milwaukee, Wis. The machine is heavily constructed, utilizing a Fordson tractor as power unit. The grader is made of heavy steel channel frame, carrying a 6-foot blade. The blade can be raised or lowered and tilted at any angle desired by the operator.

The tractor is easily controlled by the operator. The motor is swung on a three-point suspension, so that no unnecessary strains are put on the power unit. This construction enables the full application of the power unit direct to the cutting blades, utilizing the weight of the power unit itself to hold the grader steady on the road when working. For this reason the manufacturers claim that the machine will do considerably more than other light-weight graders on the market in which the power is utilized ahead of the cutting blade.

Many Rural Schools Fall In with Hot Lunch Idea

Through the efforts of extension workers of the United States Department of Agriculture and the state agricultural colleges, working in cooperation with local organizations and school authorities, hot lunches are now served to 187,434 children in 3,808 rural schools; more than 10,592 children are buying milk for lunch, and 3,241 rural schools obtain milk and serve it to 115,111 children. Through this and other agencies the serving of hot lunchs in rural schools is becoming widely extended, and the influence of this work has followed the children into their homes.

Granite Falls, Minn., to Install Diesel Engines

The Fulton Iron Works Co., St. Louis, Mo., has recently been awarded the contract for a 3-cylinder, 285 brake horse-power Fulton Diesel engine to be installed in the municipal light plant at Granite Falls, Minn. This engine is arranged for direct connection to a 190 kilowatt alternating current generator with belted exciter. The installation of the machinery is now going forward and it is expected that the plant will be in operation very shortly.

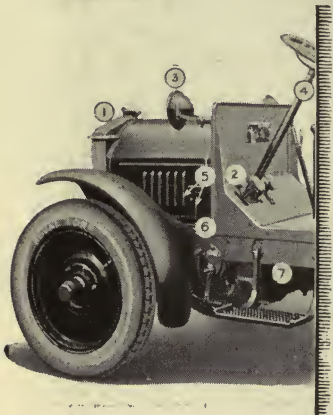
An Electric "Talking Lamp" for Highway Traffic Control

Public attention has been forcibly directed to the enormous number of serious and fatal accidents occurring on our highways and city streets. These accidents are increasing at a rate of over 35 per cent per year. Every person who owns or drives an automobile, and, in fact, every pedestrian, is directly interested in any form or device which will reduce the number of accidents. Our highways were designed originally for horse-drawn vehicles, but since 1900 these same highways have been used increasingly for motor-driven vehicles which move, practically speaking, at the same rate of speed as railroads. During this transition period little or nothing has been done to pro-

These Exclusive Features of the

FEDERAL Fast Express

Establish Its Leadership in Light-Delivery Fields



1 The Federal's Long Core Radiator, enclosed in heavy pressed steel shell with hundreds of long Fin tubes, insures ample cooling and greater strength. It is much stronger than the brittle cast shell and the thin steel passenger car types.

2 The steel dash and toe board insures strength and rigidity where these qualities are most essential. This assembly is tightly riveted and properly braced, and will not become loose or squeaky.

3 Electric lamps of generous size, with high candle power bulbs and refracting lenses, are mounted with adjustable brackets on the steel dash—out of the way of bumps and severe jars.

4 The Gemmer steering gear is of heavy truck duty, irreversible type, with worm and worm wheel. The bearings are extra large with ample adjustment for wear.

5 Such recognized units as Eisemann magneto ignition, Zenith carburetor and Stewart Vacuum System contribute materially to the superior efficiency and greater value of this Fast Express.

6 The Remy starting and lighting system insures better dependability at all times in these two essential features of truck operation.

7 The Borg & Beck clutch is of the dry disc type with large 10″ facings. Engagement and release of these fabric discs is smooth and certain under all conditions.

To those who have known Federal performance in heavy-duty service, it is enough to say that this is *Another* FEDERAL for hauling lesser loads at greater speeds.

As you study its exclusive features, note the exact adherence to standard truck-building practice in every minute detail. Nowhere do you find a passenger car part; nowhere do you find any compromise with the highest grade of truck construction.

For light delivery work, you want a light, speedy truck—but you want a *real* truck—equip with the FAST EXPRESS.

FEDERAL MOTOR
TRUCK CO.
Detroit, U. S. A.

1 Chrome Vanadium steel spring render the Fast Express practically immune from sprin breakage. The superior strength an the possibility of greater distortio without setting of this analysis o steel over carbon steel springs is wel known.

2 Timken Detroit rear axle wit worm and worm wheel insure highest efficiency with the smallest loss of power through friction. I is more costly than either the interna or bevel gear type.

3 U. S. Royal Cord tires of unusually large size—33x5—ar standard equipment.

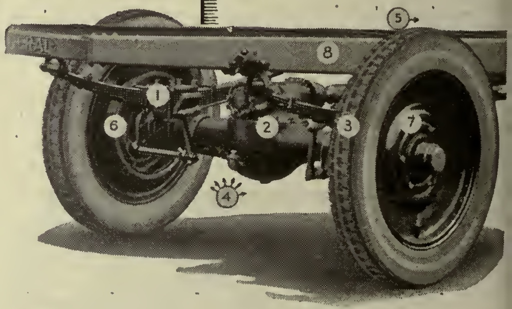
4 Alemite chassis lubrication insures proper lubrication of wearing surfaces at all times.

5 Exide heavy truck service battery with plates and separator of sufficient thickness to eliminate danger of buckling when unde almost constant charging is infinitely superior to passenger car type batteries so frequently used for truck work.

6 The brakes are extra large: 15″ in diameter, with 2½″ facings o asbestos fabric divided in four sections. Both emergency and foot brakes operate on the drums internally, but are easily accessible for adjustment.

7 Disteel wheels not only contribute materially to the appearance of the Federal Fast Express but give added strength and resiliency. Both the wheels and the tires are demountable.

8 The frame is unusually strong. It is built of 3/16″ steel of great tensile strength and is 5″ in depth and 3½″ wide. Larger and stronger than any passenger car type, the Fast Express is built to withstand and support even unreasonable overloads.



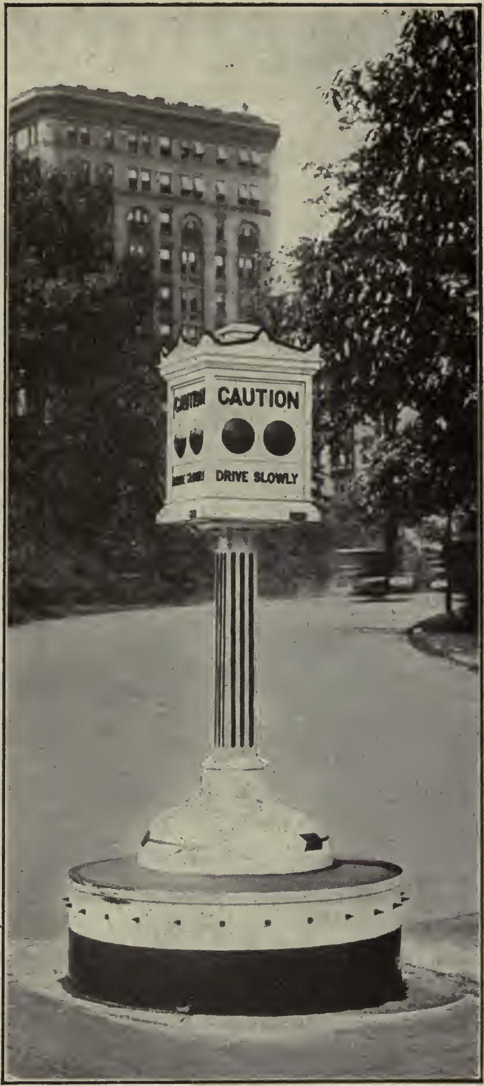
Another
FEDERAL

tect the danger spots or to automatically control highway traffic.

Few people have given more thought or spent more time in devising means of directing rapidly moving vehicles than Foster Milliken, president of McNab & Harlin Mfg. Co., John and William streets, New York City. After experiments extending over a period of 6 years, he evolved what is known as the Milliken electric street signal or "Talking Lamp,". which is used for either danger spots on highways or for highway traffic control. The ideas embodied in this highway signal are first a flashing colored light to direct attention rather than the use of a fixed light. The flashing of colored lights can easily be seen at a distance of a mile or more. Any person using the highway is, therefore, warned long in advance that he is approaching a danger spot. The second idea is to give full information regarding police regulations and information relative to location or direction to the travelling public. When a person approaches the lamp he can read the police regulations and the location or direction sign a long distance from the lamp without the necessity of stopping to ask questions. The third object is to have all of this information directly in front of the driver, so that he would not be compelled to look other than straight ahead, and further, to have all of this information clear and distinct, not only in the day time but particularly at night.

The lamp is divided into three separate and distinct horizontal compartments. The upper compartment contains a fixed white light and the lettering on the glass face is intended to give the necessary police instructions. The center compartment contains the flashing electric lights placed behind the lenses. The color of the lenses in the center compartment may be of any color, such as red, green, yellow, etc., to conform with any government, state, city or municipal regulation relative to color. The lenses used in the compartments of the lamp are of special construction, and powerful enough to permit the light to penetrate fog and mist where ordinary lights fail. The idea of having two lenses side by side instead of a single lens, is to make the lamp unique so that it cannot be confused with other lights. The lower compartment of the lamp contains a fixed white light and the lettering on the glass face is generally intended to give the location or information relative to the direction of principal cities or towns. In some cases it is desirable to put police regulations on the glass fronts on the lower compartment. When this is thought necessary, then the information relative to location or direction is placed on panels which are fastened to the pedestal of the lamp, which can be easily read either in the daytime or at night.

In the bottom of the lower compartment are placed refracting lenses which at night throw rays of light, not only over the pedestal and street, but over a considerable portion of the roadway adjacent to the bottom of the lamp. The refracted light makes the pedestal and base glow at night, bringing the lamp into sharp contrast with the black surroundings.



A TRAFFIC WARNING SIGN WITH PROTECTIVE BASE

Showing double lens, raised lettering and distinctive standard

The letterings on the faces of the lamp are made of raised black glass which is cemented to the glass fronts. By this method the letters may be read at a greater distance and a more acute angle than when simply painted on the glass. The lamps are arranged so that they are electrically connected through the base to the power current night lines so that the lamps are automatically turned on in the evening and turned off in the early morning hours when the street lighting circuits are being operated. The entire electric part of the lamp itself is of the simplest character and requires no attention of any kind other than the replacement of electric bulbs, as they may burn out.

General Motors Trucks

GMC

Some of the G M C trucks operated by the department of public works of the City of Tacoma, Wash.

Tacoma D. P. W. Continues to Buy GMC Trucks

Recently the City of Tacoma purchased three G M C five ton dump trucks for use in the department of public works, hauling road materials to new paving jobs. The selection was made because of the performance record made by two three-and-one-half ton G M C trucks that the same department has been using for several years. Comparison of the operating costs of these trucks with others showed the G M C record to be so noteworthy that the municipal authorities decided G M C was the only make to buy for this work.

Well Suited for Fleet Users

Not only because of the low operation and maintenance of G M C trucks and their unfailing service for a long period, but also because they are standard built, these trucks are being adopted everywhere by concerns which use large truck fleets.

For there is practically no difference between the construction of the various models of the G M C line except as to size and strength of the units. This standardization of manufacture is reflected in actual service by the savings that can be effected through having drivers, garagemen and mechanicians working only upon one style of truck.

Real Motor Truck Construction

G M C trucks are real motor trucks. There is not a passenger car part in them. Every unit is built for truck use only. Moreover these trucks have been designed for truck use as well as built for it. The engine in G M C trucks was developed for these trucks only. It is not a large sized passenger engine but a real truck power plant embodying features that meet the wants of truck users and that have been determined from a decade of successful truck building. The same thing is true of transmissions, axles, wheels and all other parts of the chassis. Even the electrical equipment is built particularly for G M C trucks and the battery supplied for the lighting system is of extra size and capacity.

And the cost of G M C trucks is remarkably low considering their quality. The chassis lists at the factory as follows: one ton, $1295; two ton, $2375; three and one-half ton, $3600; five ton, $3950; tax to be added.

GENERAL MOTORS TRUCK COMPANY

Division of General Motors Corporation

Pontiac, Michigan

DEALERS AND SERVICE IN MOST COMMUNITIES

One-Man Graders Freed Snow-Bound City

Last winter, Salina, Kans., was snow-bound by a 6-inch snowfall. Wires were broken, roads were blocked, railroad trains were stopped, and people were confined to their homes on account of the heaviest snow of the winter. The 24-hour snow-storm came in two installments with rain intermission. The first snow ended at 6 P. M. Thursday, according to the weather observer, who reported that 0.39 inches of moisture fell up to that hour Thursday, and 0.91 inches fell between 6 P. M. Thursday and 9 A. M. Friday. A 6-inch slush cover spread during the night.

The city began moving the slush from the center of the streets in the two business districts early in the morning, using two Avery one-man "Road Razers" made by the Avery Company, 223 Iowa Street, Peoria, Ill. One of these machines was owned by the city of Salina and the other was loaned to the city by the branch house of the Avery Company in that city. The snow was moved from the center of the streets so that traffic could be maintained. The curb lines were also kept open so that the water would not be interrupted in its flow to the catch-basins.

ROAD MACHINES OPENING UP THE STREETS OF SALINA, KANS., EARLY IN 1922, AFTER HEAVY SNOWFALL

Electric Sirens for Volunteer Fire Departments

Electric sirens for calling together volunteer fire departments in small cities and towns are becoming more and more common and have proved their value in getting the department to the fire within five minutes after it has been discovered. The old method of using the telephone to notify some one to ring the bell, is quite obsolete. Usually a bell can be heard only in a small part of a town, particularly when there is a strong wind blowing. A siren, which gives a distinct, piercing call, is a great advantage. It can be heard throughout the town, even before the telephone call has been completed. Many small towns have discarded their local steam plants and therefore the steam whistle is obsolete. Electricity, being available, calls for the use of an electric siren, efficient, quick and distinctive. The siren is usually placed in the center of the town and must be so constructed that the sound is distributed with proper deflectors equally and in all directions. It must be protected from sleet and bird's nests, yet the sound must not be obstructed, and it must require a minimum of attention and oiling.

Claims have been allowed and patents are now pending on a vertical siren covering these points, made by the Erick Electric Siren Company, 12 West Fillmore Avenue, St. Paul, Minn. The simplicity of the machine permits it to be sold at a reasonable price. The manufacturers claim that in the most difficult locations this machine has given great satisfaction and is saving a great deal of waste time by getting out volunteer fire departments five to ten minutes quicker than under old methods.

Street Lighting Illustrations Not of Type Specifically Recommended

Neither of the illustrations appearing in the article "The Essentials of Modern Street Lighting" in the July, 1922, issue of The American City was of the type specifically recommended by the Committee on Municipal Affairs of the Minneapolis Civic and Commerce Association of Minneapolis, Minn. These standards are, however, in common use in many cities throughout the country.

TURTLE BACK SILENT TRAFFIC OFFICER

Unequalled for Wide or Narrow Streets
Safety Islands · Bridge Approaches
Sharp or Narrow Turns
Intersections, with or without tracks
Indispensable in Heavy Traffic
Write for Special Offer

UNION IRON PRODUCTS CO. EAST CHICAGO
INDIANA

The Postmaster General said,

"—if expeditous and efficient city delivery service is to be accorded it is essential that all buildings to which mail is delivered be *properly numbered*—"

IS YOUR CITY PROPERLY NUMBERED?

Let us send you the catalog of Premax House Numbers and samples of popular designs. The most complete line available.

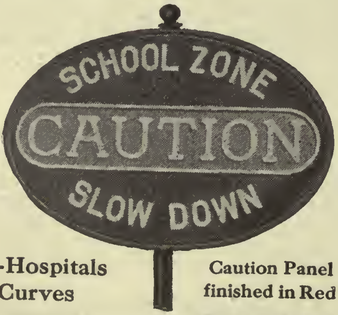
NIAGARA METAL STAMPING CORPORATION
NIAGARA FALLS, N. Y.

Division A **Ask about Premax Auto Pennants, too.**

A
Western Sign
For Every Purpose

CAUTION SIGN

The
Silent
Sentinal
for



Schools---Hospitals
Sharp Curves
Low Clearance
Bridges---Steep Grades

Caution Panel finished in Red

Write for Literature

WILL NOT RUST

Manufactured by
Western Display & Mfg. Co.
Saint Paul, -:- Minnesota

DISTANCES ABOLISHED

For maximum legibility, strength, durability and long, dependable service, Lyle Signs are the choice of the most exacting buyers. Let us tell you where Lyle Signs are giving satisfaction and why.

LYLE-SIGNS
171-27TH AVE.-S.E.
MINNEAPOLIS

Send for the New Municipal Catalog.

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What Some Mayors Think of Prohibition

THE Mayors of the larger American cities were asked recently to give the readers of THE AMERICAN CITY the benefit of their opinions on the prohibition subject. Specifically, these Mayors were asked: "Has prohibition helped in *your* city? Has it reduced drunkenness, crime and unemployment, or in any way affected the total of drug users in the community?"

Of the replies received, only two were distinctly unfavorable to the Eighteenth Amendment. In the interest of fairness, these letters—from the Mayors of Boston and Paterson—are published in full. Space limits prevent publication of all the letters favorable to prohibition, but the eight such letters published show the trend of sentiment in widely scattered cities.

THE AMERICAN CITY would not do justice to the convictions of its editors if we failed to point out two phases of this difficult problem to which most friends and foes of prohibition have given inadequate consideration:

(1) The curtailment of personal liberty is repeatedly cited as an argument against the Eighteenth Amendment. But we have in every large city many other restrictions on personal liberty adopted in the interest of the community. Our traffic ordinances are a case in point. If experience had shown that the reckless driver endangered himself alone, his personal liberty would not have been invaded by traffic ordinances. But such regulations are upheld in principle even by automobilists who occasionally disregard them in practice, as a necessary curtailment of personal liberty in the public interest. Similarly, if experience had shown that intoxication injured the drinker only, such personal liberty might have continued unchallenged. But the social costs of drinking, to the families of drunkards and to the communities in which they live, are ample justification, we believe, for the curtailment of the former personal right to get drunk. And, just as our traffic laws apply both to the careful and to the careless driver, so must our liquor laws apply both to the careful and to the careless drinker, in the interest of the society of which each is a member.

(2) Many city officials who favor the enforcement of the Volstead Act, and many who favor a more liberal interpretation of the Eighteenth Amendment, are a unit in desiring no return of the old-fashioned saloon. Too little attention has been given, however, to the supplying of substitutes for the saloon in its desirable function of the "poor man's club." THE AMERICAN CITY commends to all who are solicitous for the welfare of their fellow citizens the providing of more adequate facilities for outdoor and indoor fellowship and recreation, where the fundamental human need for companionship and play may find an outlet under the best possible conditions. If we wish to prevent the return of the saloon, let us by all means provide a morale equivalent for this ancient institution of city life.

The letters from the Mayors follow:

Boston, Mass.

My deliberate and considered opinion of the effects of prohibition on certain specified phases of American life, based on my observation of its administration, is appended:

1. It has not reduced drunkenness; it has stimulated its more vicious forms; it has created new drunkards; and has given the practice of excessive indulgence in intoxicants a defiant and deplorable popularity.

2. It has increased crimes against persons and property; it has invented new crimes, such as the illicit traffic called "bootlegging," the manufacture and sale of deleterious and dangerous liquors and the forgery of labels, bottles, cases and other appliances to cover this spurious traffic. It has brought law and order generally into contempt and engendered a method of law enforcement among prohibition agents as criminal and lawless as that of the violators they seek to restrain.

3. The increase in the sale and use of deleterious drugs and chemical intoxicants is one of the most alarming features of prohibition's by-products, and one of incalculable evil to our democracy and civilization.

4. Prohibition has not reduced unemployment; on the contrary, it has increased it. It is self-evident that the confiscation and destruction of industries licensed and regulated by the Government and the resultant wholesale unemployment of the millions of workers turned adrift by this action has had a pronouncedly evil influence on the industrial conditions of the country. The economic conditions of Europe reacted on ours, restricting our industrial activity by closing our foreign markets, slowing down our productive agencies and making it impossible for them to absorb and employ the millions turned adrift by the Government's prohibition folly.

Prohibition has affected the psychology of America as disastrously as it has its industrial and economic forces. It has produced discontent and unrest among the workers, who declaim bitterly against the injustice and discrimination of the law, giving the wealthy privilege and opportunity the laboring classes cannot make available. Any law that sets class against class is a menace to the peace and stability of the country.

Prohibition has demonstrated to many thoughtful minds that no phase of the American citizen's life and activity is safe from the meddling and interference of those persons and organizations whose bigotry and fanaticism lead them to believe they are above and beyond the restrictions of the law and the limits of the Constitution and are divinely directed to control the religion, speech, habit and happiness of their fellow citizens and abridge their liberties, even though their intolerance and insolence involve civil dissension and public tumult. The same forces that have precipitated prohibition and restricted personal liberty are now reaching out to control public education, destroy state rights, subordinate the constitutional liberties of the states to congressional whim, bring in a species of union of church and state and revive on American soil all the evils of the European, imperialistic régimes that it has taken centuries of time and millions of human lives to eradicate.

It is time for the American Republic to rouse itself and to say whether the rule of government of the people, by the people, for the people is to continue on our soil, or whether the tyranny of intolerance and fanaticism is to be substituted for democracy. The proponents of prohibition constitute the narrowest school of thought in America and have their home and obtain their power in the least enlightened, most retrogressive and law-defying sections of the United States. If they and their peculiar doctrines triumph, then America will perish in anarchy and bloodshed.

JAMES M. CURLEY,
Mayor.

Paterson, N. J.

The effect of prohibition in the United States, as I see it, has been disastrous.. Prohibition was promoted to wipe out the liquor traffic. It has done nothing of the kind. It has substituted for the regulation of the business of selling liquor, wines and beers an unlicensed trade; it has substituted for good liquor a brand of liquor that may best be designated as poison; it has substituted for the regulation of selling liquor a bootlegging combination that is country-wide; it has substituted for respect for the law disrespect for the law.

The prohibition fanatics who control Congress evidently do not understand that in order to approach their ideal—if it be their ideal—we must change human nature. I personally know of some of the men in Congress who voted for prohibition and the Volstead Act who do not practice prohibition and who are more intemperate, so far as the use of liquor is concerned, than any anti-prohibitionist. It is just such men who have made it possible to foist prohibition upon this country—the only country on earth, aside from Turkey, that prohibits the sale of liquor with alcoholic contents.

Answering your question specifically as to whether prohibition has reduced drunkenness, I can say that it has not. It has increased drunkenness and has increased the number of deaths due to drunkenness. It is impossible, of course, for public officials of a community—especially a community with a cosmopolitan population—to enforce strictly the prohibition law. It would require a great increase in the police department to enforce the law to any extent, because the sale of liquor is conducted surreptitiously. Another cause of drunkenness is the practice of distilling and brewing in the homes. Prohibition has converted many homes into distilleries and breweries.

Prohibition has not reduced crime. Crime is far more rampant to-day in all parts of the country than it ever has been. No man who reads the newspapers needs to be told that this is true.

Prohibition has greatly increased the number of drug users in this country. The latest Government statistics show that this country uses seven times as much narcotic drugs as any other country.

Prohibition has decreased the revenues of cities, states and the National Government without accomplishing the slightest benefit, and these additional burdens must fall upon the home-owner and other property owners.

The Eighteenth Amendment was passed at a time when the country was at war. It was not passed because of any popular demand for such an amendment, but because of the activities of professional lobbyists in Washington and various state capitals. The Volstead Act, which assumes that any liquid containing more than one-half of one per cent alcohol is intoxicating, is a palpable fraud and should be wiped from the statute books of our country without delay, because the statute books of our country are no place for fraud.

FRANK J. VAN NOORT,
Mayor.

Salt Lake City, Utah

While I know full well that bootlegging is going on throughout the country and that we have guilty parties here; while I know that some citizens are making "home-brew" and are dealing in cheap intoxicants, I do, without hesitation, say that prohibition has resulted in untold good to this city and state. While there may be bootlegging going on in homes and cellars, it is very seldom indeed that I, at least, see a drunken man. This was not the case before prohibition. Hundreds could be seen on our streets at night time in a period of a week, while months and months pass now without seeing any.

Fewer crimes are being committed than heretofore; our city jail, from actual statistics, houses about one-fourth the number it used to; men out of employment are fewer than heretofore. Homes are happier, bills are more promptly paid, private and public property better preserved and maintained, and withal, conditions are greatly improved.

Propaganda against prohibition has been going on quietly in our midst for months. It has made converts of some of our respectable people, but I am sure that the great preponderance of our thinking and respectable people do not want to go back to pre-prohibition days.

C. CLARENCE NESLEN,
Mayor.

Wilmington, Del.

I think prohibition has undoubtedly helped this city. The population of our jail is about one-third less, and the Warden says that this decrease is largely due to prohibition. Of course, some think that the industrial depression has contributed to the decrease in crime. In any case, it seems to me incontrovertible that the average citizen is helped by prohibition, and very few citizens would want to return to the conditions prevailing before the law went into effect.

Of course, it will take years to get some people to obey the law and to want to obey it, but I feel sure that the vast majority believe that the United States took a long step forward when prohibition was passed.

LE ROY HARVEY,
Mayor.

Springfield, Mass.

To the question, "Has prohibition helped in your city?" I would most emphatically answer "Yes."

Drunkenness has been materially reduced. Many families who were formerly suffering for the necessities of life are now quite prosperous and happy. I see no increase in drug users; in fact, I believe they are decreasing.

I find Springfield is prosperous under prohibition, in spite of bootlegging and underground moonshine. Due, I believe, to lack of enforcement by the Federal officers, there is considerable bootlegging and moonshine and disrespect for law, which is the worst feature of the whole business. There is a general feeling here that the Federal authorities are not sincere in their work of enforcing the law.

EDWIN F. LEONARD,
Mayor.

Portland, Oregon

Portland and Oregon have had prohibition for a number of years, and the result has been very good. While I have no late figures on the social and industrial effects, we did at one time compile figures showing that prohibition greatly reduced drunkenness, crime and unemployment and had a beneficial effect on the community from a business standpoint, not to mention the moral benefit. We have compiled no recent information on the subject because there is no demand for it, the question of anti-prohibition being an entirely dead and forgotten issue locally.

As to the effect of prohibition on the drug habit, I have no statistics, but I believe the use of drugs may have increased to some extent, principally by persons who have become in bad physical condition through the drinking of moonshine.

GEO. L. BAKER,
Mayor.

Los Angeles, Calif.

In order that you might be given accurate information, the Mayor requested the statistician of the Police Department to furnish certain comparative statistics that might be of assistance in answering your query.

The Mayor is informed that the charge has been spread in certain portions of the United States that law and order conditions in Los Angeles are worse at the present time than they were in 1916 under the old saloon régime. This is absolutely untrue.

During the first six months of this year, 4,682 arrests were made for drunkenness, while for the same period in 1916 the arrests totaled 8,770. This, taken into consideration with the following facts, would indicate that conditions have greatly improved under prohibition.

Los Angeles now has almost twice as many inhabitants as it had during the year 1916. Further, the laws for the apprehension of intoxicated individuals on the streets of Los Angeles now are much more strictly enforced than they were under the saloon régime. In fact, a person showing the least signs of intoxication is almost immediately apprehended at the present time, while under saloon conditions no arrests were made unless the man was in a helpless and maudlin condition.

It is true that there has been an increase of crime in the city of Los Angeles, but not greater proportionately than the increase in population. There has been a largely increased number of arrests due to the fact that, owing to the great congestion in the streets of Los Angeles, it has been found necessary to enforce very strictly the traffic ordinance.

There have been an increasing number of arrests made for the violation of the Volstead Act and the Gandier or Los Angeles city liquor ordinance. This is due in part to the fact that Los Angeles is within four hours' automobile travel, over splendidly paved roads, of the Mexican border. This border is very insecurely guarded, offering inducements to bootleggers and others who would bring liquor and drugs into this country.

Another difficulty that has beset those who would enforce the Volstead Act is the fact that the state of California has up until the present time failed to pass an enabling act that would put the forces of the state, county and municipalities at work enforcing the Volstead Act. In consequence, that burden has largely fallen upon Federal officials, few in number, with a very large amount of territory to cover.

Notwithstanding these conditions, Los Angeles and Southern California have prospered wonderfully under prohibition. A largely increased number of persons are building homes. Our people are better clothed. They have better living conditions generally. Business and manufacturing conditions are wonderfully improved. And the facts are that a very large majority of our people would under no conditions return to the old saloon days. So far as Los Angeles is concerned, those days are gone forever.

There is a noisy minority that is working for light wines and beers, but there has recently been a very decided stiffening of public sentiment against the sale of liquor in any form and a decided determination on the part of our best citizens to stop the illegal sale of liquor.

H. H. KINNEY,
Secretary to the Mayor.

Kansas City, Kans.

It is evident that we have a cleaner and safer city by reason of prohibition. It is true that there is a disposition on the part of many people to manufacture liquors. Our Police Department is annoyed considerably by this class of violators. However, the majority of such violations are in private homes where liquors are manufactured for the consumption of families and not for commercial sale.

Our bank deposits and the credit of the working people are much improved since the prohibition of the liquor traffic.

HARRY B. BURTON,
Mayor.

Dayton, Ohio

The results of prohibition in Dayton up to last year had been satisfactory. The records of the Police Department show that intoxication and crime had been decreasing. So far this year, however, there have been more arrests for drunkenness and other offenses than last year. This condition, no doubt, may be chargeable to the unemployment situation. There has been considerable illicit selling of liquor in the city, but through the efforts of the Police Department "Liquor Squad," and the fines imposed by our Municipal Court, bootlegging has not been very profitable here. While our Police Department has had difficulty in enforcing the prohibition law, still we feel that the city has greatly benefited by the closing of the saloons. Men who are now employed save more money, and their families have more comforts, than when there was the temptation of a saloon on almost every corner.

As to the effects of prohibition with reference to drug users, our police records show that there are practically no drug users in Dayton.

FRANK B. HALE,
Mayor.

Fort Worth, Texas

Fort Worth and vicinity had several hundred saloons, one on every prominent corner. Their influence was obviously and always toward the overthrow of hosts of men in this community and toward the impoverishment of their families. These open saloons were breeding-places for crime of every description. The closing of them lessened drunkenness in this city easily 75 per cent.

At the time of the open saloon, our jails were constantly filled with drunks. Now it is only occasionally that an intoxicated man is seen on the streets of Fort Worth. Of course, booze can be obtained by those who know how to obtain it, but before prohibition it was advertised and urged publicly and privately upon all classes of people.

You ask what influence prohibition has had upon unemployment. Drinking is less common now than in the days of the open saloon. Men who are uninfluenced by liquor are in better condition for employment than those who are under its influence. Of course it is unfair to compare the number of men unemployed to-day with the number of men unemployed in good times when prohibition was not in effect. There is unemployment now, but it is caused by adverse financial conditions, which have pushed many businesses to the wall and have made business men discharge many employees. Prohibition has in no way caused the present wave of unemployment. It is fortunate that we do not have the open saloon plus the present wave of unemployment. Financial crises always carry with them an increase in crime record. Again, from the point of view of the present crime tendencies, it is well that this financial crisis does not have to carry the burden of the open saloon.

It is claimed that drug users are more common now than they were before the days of prohibition. This is possible, but it seems probable that because the common drunkard is less in evidence the drug user has become more obvious.

Prohibition is not as effective as it ought to be. It has to combat organized and powerful foes, but prohibition has been helpful to this city, both economically and socially, and though not perfectly enforced, it is a tremendous step in the right direction.

E. R. COCKRELL,
Mayor.

Motor Flushing in Chicago

Held Invaluable in Maintaining Clean Streets

By William J. Galligan

Assistant Superintendent of Streets, Chicago, Ill.

CHICAGO was quick to appreciate the value of the horse-drawn flusher when it was first brought out, and was one of the first cities to use these flushers extensively for eliminating dust in connection with street cleaning. For this purpose it purchased, in 1909, forty St. Louis sanitary flushing machines and, later, a number of the Studebaker make.

The chief sources of dirt creating dust on city streets are abrasion of pavements through vehicular traffic, horse manure, droppings from excavation, building material, coal and refuse vehicles, building and sidewalk sweepings, wind-swept dust and particles from roof areas, and smoky atmosphere.

Chicago's street cleaning problem has materially changed during the last decade. In 1911, the city's License Bureau showed 73,226 horses and 13,944 auto vehicles, as against 31,032 horses and 198,924 auto vehicles at the present time. The state has issued licenses thus far during 1922 for over 700,000 motor cars, many of which, undoubtedly beyond the number licensed here, operate in this city. During the past ten years, the population has increased 600,000, and 500 miles of new pavements have been laid on streets never before paved. Chicago has, in all, 3,278 miles of streets, of which 2,188 miles are paved.

The horse-drawn flushers, 600 gallons capacity, have gradually given place to 5-ton power flushers of 1,500 gallons. The city has eight of these—seven Mack trucks equipped with Hvass single flushing units, one Packard truck with South Bend "Studebaker Model" double flushing units, and has contracted for ten Super trucks also equipped with the "Studebaker Model" double flushing units. These are now being delivered, and will make eighteen in all. It is expected that they will be added to from year to year until the city has fifty.

ONE OF CHICAGO'S FLEET OF MOTOR FLUSHERS

How the System Works

Chicago's streets are cared for by the patrol system of "white wings," and in the outlying districts by motor sweeper and pick-up machines. The flushers are used as an adjunct of the street cleaning forces for the purpose of securing absolutely clean pavements.

In the down-town, or "loop" district, all streets are flushed nightly. The main-artery car-line streets throughout the city are flushed tri-weekly. During the day the streets of the "loop" are sprinkled by private contract, but outside of this center the thoroughfares are free from dust even under heavy, swift-moving auto traffic, with a tri-weekly flushing service without supplementary sprinkling. No flushing is performed on Sundays. The flushers are used down-town during all seasons of year when weather conditions permit, and on other streets from May to November.

With one exception, the flushers are operated in double shifts, between the hours of 12:30 and 9:30 P. M.; and with change of drivers and helpers from 9:30 P. M. to 6:30 A. M., one hour being allowed each shift for supper, making fifteen shifts in all. These flush 267 lineal miles daily, or 133½ miles of full-width pavement in two operations—a square yardage of 2,937,000 yards. In the busiest shopping district, the sidewalks are flushed at night by use of two horse-drawn flushers, from each of which a hose is operated by two laborers.

The Mack flushers cost $9,000 each, the Packard $7,580, and the Super $7,500 each. The life of a flusher is estimated at 50,000 miles, and it will be discounted from year to year on the basis of mileage traveled. Chauffeurs receive $6.50 and helpers $5.00 per shift of 8 hours. The Mack single units average 17 lineal miles per shift, or 8½ miles full-width pavement in two operations, consuming 1 quart of oil at 12 cents and 12 gallons of gasoline at 21 cents per gallon, making a cost of $2.64 for oil and gasoline. The Packard double unit averages 23 lineal miles per shift, or 11½ miles full-width pavement in two operations, consuming 1 quart of oil at 12 cents and 16 gallons of gasoline at 21 cents, making a cost of $3.48 for oil and gas. All makes operate with 40 pounds pressure directed on the stream. For the year of 1921 the cost of operation of the Mack single unit flushers, including oil, gasoline, grease, shop labor, parts, tires, chauffeurs and helpers, averaged 82 cents per lineal mile, and that of the Packard double unit 74 cents per mile, the cost per 1,000 square yards being 7⅓ cents. The city carries its own insurance and owns its garages.

It has been ascertained through observation and accurately kept records that the double unit not only gives better results in operation because of ability to control the stream regardless of the speed of the truck, but also in point of economy is to be preferred; the double unit flushes on an average 6 more lineal miles of pavement to a shift than the single, with 4 more gallons of gasoline, using 46 tanks of water as against 37 with the single. Those of single unit run on second speed when flushing; those of double unit run on high speed.

On streets of 50-foot width or less, which comprise 99 per cent of all streets flushed, one trip is made on each half of the street. On the first, which includes the center between the innermost car tracks, three nozzles are used on the single unit type, and two on that of the double; on the return trip, two nozzles are used on all makes.

On the flushers of the single unit, the four nozzles are trained to the right of the direction traveled; good results are not obtained otherwise. On the new flushers the nozzles will be arranged, like that of the present double unit type, to flush either or both sides in one operation, and it is planned to flush the full sweep of pavement up to a width of 50 feet, if the pavement is comparatively clean.

The Power Flusher Has Eliminated Complaints

During the time of the horse-drawn flusher, numerous complaints were made by the Bureau of Sewers that the catch-basins were quickly filled by reason of their operation, entailing added work and expense. With the coming of the power flusher, those complaints ceased. This was probably due to two facts: first, that with the partial passing of the horse-drawn vehicles, the surfaces of pavements are not as dirty as formerly; second, that the horse-drawn flushers traveled slowly, going over the street more times and using much more water, which was driven to the gutter in volume, while the power flushers travel rapidly and discharge the stream with a cutting edge on the dirt, landing it in the gutter with comparatively little water.

Municipal Building Codes

By L. H. Hart

Consulting Engineer, Buffalo, N. Y.

THERE is a large and almost untouched field where economies can be effected by revising our building codes in the light of experience and allowing higher unit stresses, thinner walls, leaner mixes, and substitution of cheaper for more expensive materials at advantageous points. There is an amazing range, for instance, in the allowable safe loads for masonry in the various city building codes. In order to bring the subject forward for study, this article reviews the codes of a hundred cities, on the subject of masonry, plaster and stucco. Many codes are almost blank on important phases of these trades, and it is hoped that this summary will be helpful to progressive city building officials who wish to revise their codes and bring them up to the standard set by the best paragraphs on each subject.

Factor of Safety

Almost without exception, city codes call for actual breaking stresses in masonry at least ten times as great as the working loads. The only exceptions appear to be: Wichita, 5; Youngstown, 4, and Waterbury, 5.

Sand

Most city codes call for sand that is clean, sharp, free from loam, clay, salt and organic matter. A few refer to the fineness:

Pasadena—Not over 65 per cent through No. 50 sieve
Portland, Me.—Not over 6 per cent through No. 100 sieve
Chicago—Not over 55 per cent through No. 20 sieve
Cleveland—Not over 70 per cent through No. 30 sieve; not over 30 per cent through No. 60 sieve; not over 5 per cent through No. 200 sieve
Columbus—All through No. 10 sieve

Others make some attempt to solve the problem:

Wilkesbarre—"Free from all impurities."
Dayton—"Hard, moderately sharp."
Omaha—"Not dirty or loamy."
Seattle—"Coarse, sharp."
St. Louis—"Equal to Mississippi River sand."
Roanoke—"Clean, sharp."

Over a third of all the cities make no attempt at all to say what sand for masonry shall be like.

Cement

Most cities now refer to the cement specifications of the American Society for Testing Materials, as every cement manufacturer can comply with it, and it has been well tried out. Cement is now manufactured to as fine a standard of uniformity as rails, wire, or thread.

Lime

In the case of lime, the matter is not so simple, for the specifications of the American Society for Testing Materials are comparatively new, but they have been recently revised and now include directions for slaking and ageing. Their use is increasing rapidly, but there are still some cities whose codes are lamentably lacking in any aid to the mason, in choosing good quicklime, or slaking it properly. The "fresh burnt lime of commerce" is good enough in Birmingham, Cincinnati, Detroit, Duluth, Macon, Norfolk, Philadelphia, Pittsfield, Richmond and Wilkes-Barre. Nashville is the only city to follow the lead of the Underwriters' code, by calling for quicklime complying with the A. S. T. M. specifications.

Hydrated lime, the modern, convenient, powdered form, has received even less attention, most cities making no reference to it at all. Dayton, Kansas City, Mo., Nashville, New York, and the Underwriters are the only codes calling for A. S. T. M. standards. Birmingham says, "Standard quality"; Boston, "Pine cone or equal"; Detroit and Duluth, "First quality"; Minneapolis, Rochester, and St. Paul, "Approved brands"; Richmond, Va., "Original packages, first quality"; South Bend, "Standard brand."; Wilkes-Barre, "Pulverized."

Mortar

As to proportions for lime mortar, wide differences of opinion occur. Many cities and the Underwriters think one part of lime putty sufficient for four of sand (by volume), and five in Boston, Portland, Ore., San Francisco, Spokane, Tacoma, and Waterbury. But Birmingham, Chattanooga, Columbus, Dayton, Louisville, Macon, Manchester, Memphis, Pawtucket, Seattle, South Bend, and St. Louis reduce the sand to three parts. Omaha suggests that sand be proportioned "to suit the lime"; Cambridge and Wilkes-Barre, "properly proportioned"; Boston, District of Columbia, and New Orleans say that mortar shall have "cohesion, tenacity, and adhesion."

Safe working loads for brick work depend largely upon the quality of the brick. Brick are classified under so many names that brick masons themselves might easily become confused. We find merchantable, red, salmon, selected, hard common, select, ordinary hard red, hard, standard common, kiln run, common kiln run, common, number 1 common, first common, hard common, pavers, number 1 pavers, hard pressed hydraulic paving, strictly hard pressed, pressed, hard hollow, shale, vitrified, arch, sewer, and grades A, B, C, and D, rated by compressive strength. But even with the same grade of brick, the variation in allowable load is striking. Using number 1 common brick (or equal), with lime mortar, we note that these cities allow less than 100 feet per square inch: Buffalo, 42; Dayton, 75; Denver, 70; Manchester, 83; Milwaukee, 83; Pasadena, 83; Providence, 83; Roanoke, 83; Rockford, 90; San Francisco, 97; South Bend, 80; Spokane, 97; Utica, 83; Youngstown, 97. All the rest allow 100 to 111 pounds, except Columbus, 139, and New Orleans, 150.

With cement mortar, Buffalo allows only 70, Roanoke, 139; twenty cities use 166 to 180 pounds; twenty cities 200 to 222 pounds; twenty-two cities permit 250 pounds; and two cities (Boston and Cambridge) allow 280; while New Orleans tops the list at 300. But with paving brick, eight cities permit loads of 350 pounds, and the state of Illinois allows 400 in that case.

Rubble Masonry

For stone work, ordinary rubble, there is but little more agreement: Buffalo, 42; thirteen cities, 56 to 60 pounds; twenty-two cities, 70 to 75; nine cities, 80 to 85; three at 100 to 111; and two at 120. When cement mortar is used, Buffalo is again low at 70 pounds; five cities permit 100; thirty-one allow 140; eleven agree to 153 to 173; four at 200 pounds are the maximum.

Plaster

Suitable phases of the plasterer's trade for treatment in a city building code are: specifications for sand, cement, lime, hard plaster, hair, wood lath, metal lath, fastening and spacing of lath, proportions, number and thickness of coats, time between coats, etc. Although the Society for Testing Materials has carefully prepared specifications for cement, quicklime, hydrated lime, hard plasters, and several kinds of lath, many cities have as yet made no use of the results of all this labor, by referring to any such specifications in their codes. The U. S. Bureau of Standards has organized a "plaster conference" composed of experts on each material, each phase of the work, and each large group of users, and before very long the report of this conference will be available to the public. It will cover every phase of the subject, beginning with the preparation of the backing, and extending to the decoration of plastered walls, and will be a valuable document for public officials. The various associations of manufacturers, also, are glad to advise and to furnish technical data for city officers who wish to write a correct and complete code.

The only cities which attempt anything in the building code on plaster proportions are Manchester, Minneapolis, Pawtucket, Rochester, South Bend, St. Louis, and St. Paul. They agree pretty well on 2½ parts of sand to 1 of lime putty for the first coat, and 4 or 5 parts in the second. Hair is called for, 2 to 5 pounds per barrel of lime in the first coat, and none to 3 pounds in the second, but the finish coat is largely left to imagination. Putty must age for 3 to 7 days, according to the locality. Eleven cities agree that three-coat plaster should be ⅞-inch thick. Some indicate that if hard plaster is used, or metal lath in place of wood, the thickness can be slightly reduced.

The key, or space between wood lath, seems to be uniform at ⅜-inch for lime, and ¼-inch for hard plaster, in the ten cities which make reference to it at all.

Stucco

Few cities make any reference to stucco. St. Paul calls for three coats on ⅝-inch grounds, 24 hours between the first two coats, in proportions respectively 1:2, 1:2½, 1:2½, the first coat containing hair and ten pounds of lime putty per bag of cement. Richmond, Va., has a similar specification.

The Portland Cement Association, Chicago, Ill., and the National Lime Association, Washington, D. C., now issue successful stucco specifications, which might well be incorporated, or at least referred to, in every city code.

A Warehouse and Stock Record System for Cities

By James A. Brouk
City Manager, Pawhuska, Okla.

THE city of Pawhuska, Osage County, Okla., the home of the Osage Indian Tribe, and the "oil mecca" of the mid-continent field, with a population of 8,000 inhabitants, completed the construction of a warehouse, April 1, 1922, and now employes an experienced warehouse superintendent, R. E. Dobson, to collect all the city's material, tools, and equipment under one roof and to maintain cost data for the various departments of the city's administration. Upon the completion of the warehouse, the stocks of material and equipment were assembled from the various storage rooms over the city, and an inventory was taken and brought into stock.

A set of bookkeeping, simple and comprehensive, was installed to meet the needs of the city's business, consisting of a stock ledger, an invoice register and a series of labor and material recapitulation sheets. The stock ledger is divided into two sections, showing receipts and disbursements of materials. The Receipts side of the book gives the name of the article, date received, invoice number, from whom received, unit price, freight or express, and the total amount of invoice or inventory. The Disbursements side gives the date, order number, to whom delivered, department, total cost, and the balance of material on hand. The invoice register shows the date, number, and terms of invoice, from whom received, list of articles, the amount of freight or express, material cost, total cost, date received and checked, date paid by warrant, and department for which material was bought. In fact, the stock ledger and invoice register contain any information which is desired in connection with the receipt and disbursement of materials.

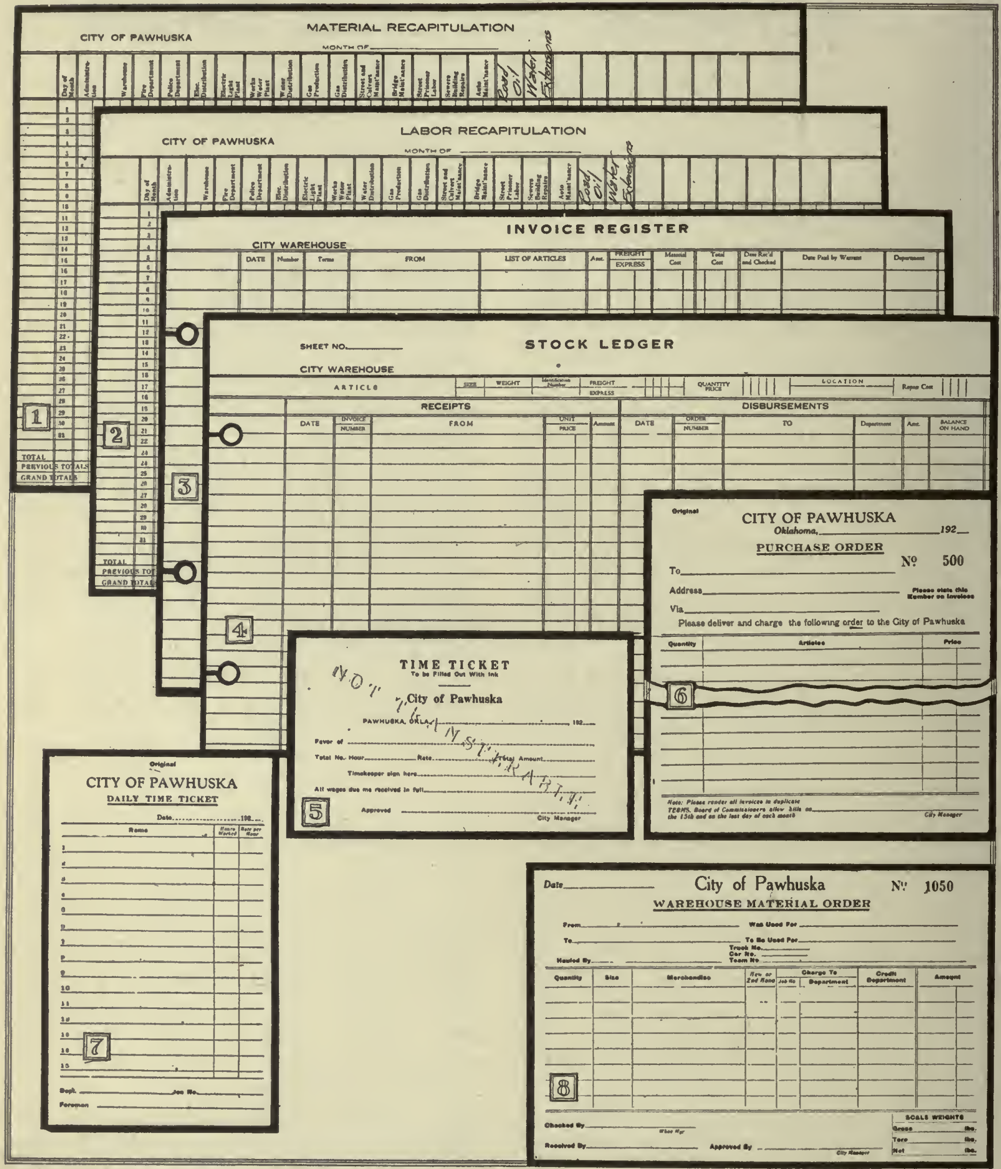
All purchases are made on orders issued in triplicate through the office of the city manager; likewise, no article is permitted to leave the warehouse except on a warehouse order issued in duplicate through the office of the city manager. In this way the city manager, as well as the warehouse superintendent, maintains a record of every article purchased and disbursed. All warehouse orders are signed by the foreman or employee of the department for which the material is used. The cost of this material is charged against the proper department, and a daily quantity balance is maintained on each article in stock. Any article loaned to another department or individual is accounted for and must be returned in the time specified.

Each foreman is supplied with a tool-box, where he keeps tools and equipment for his particular department. He is responsible for the return or proper accounting of each piece of equipment charged to him. The warehouse superintendent has a perfect record at all times of the location of each tool or piece of equipment.

The Cost Records

The warehouse superintendent is also timekeeper for the city's entire pay-roll. Public utility employees report to the warehouse at 8 a. m. for materials and tools necessary for the day's work, and report back by 5 p. m., at which time each foreman turns in a daily time ticket for his group of men. A daily cost of each department in labor, material, and incidentals, such as telephone, repairs, etc., is maintained on a monthly recapitulation sheet, so that the head of each department may know the exact expenditure of his department for the month, and is thereby able to eliminate any unnecessary expense. Such information is most essential in computing cost runs on the various departments, especially where a revenue is derived, such as the light, water, gas, or police departments. It furnishes the operating and fixed expenses for any one department, which enables the executive of the city to discover financial "leaks," to reorganize his labor, and to adjust whatever is necessary in order to show a gain instead of a loss for the different departments.

A cost sheet is also kept on repairs and



1

CITY OF PAWHUSKA

MATERIAL RECAPITULATION

MONTH OF

Day of Month | Administration | Warehouse | Fire Department | Police Department | Elec. Distribution | Electric Light Plant | Works Water Plant | Water Distribution | Gas Production | Gas Distribution | Street and Culvert Maint'nance | Bridge Maint'nance | Street Prisoner Labor | Sewers Building Repairs | Auto Maint'nance | Road Oil | Water Extensions

TOTAL

PREVIOUS TOTALS

GRAND TOTALS

2

CITY OF PAWHUSKA

LABOR RECAPITULATION

MONTH OF

Day of Month | Administration | Warehouse | Fire Department | Police Department | Elec. Distribution | Electric Light Plant | Works Water Plant | Water Distribution | Gas Production | Gas Distribution | Street and Culvert Maint'nance | Bridge Maint'nance | Street Prisoner Labor | Sewers Building Repairs | Auto Maint'nance | Road Oil | Water Extensions

TOTAL

PREVIOUS TOTALS

GRAND TOTALS

3

INVOICE REGISTER

CITY WAREHOUSE

DATE | Number | Terms | FROM | LIST OF ARTICLES | Amt. | FREIGHT EXPRESS | Material Cost | Total Cost | Date Rec'd and Checked | Date Paid by Warrant | Department

4

SHEET NO.

STOCK LEDGER

CITY WAREHOUSE

ARTICLE | SIZE | WEIGHT | Identification Number | FREIGHT EXPRESS | QUANTITY PRICE | LOCATION | Repair Cost

RECEIPTS: DATE | INVOICE NUMBER | FROM | UNIT PRICE | Amount

DISBURSEMENTS: DATE | ORDER NUMBER | TO | Department | Amt. | BALANCE ON HAND

5

TIME TICKET

To be Filled Out With Ink

City of Pawhuska

PAWHUSKA, OKLA. ____ 192__

Favor of ____

Total No. Hour ____ Rate ____ Total Amount ____

Timekeeper sign here ____

All wages due me received in full ____

Approved ____ City Manager

6

Original

CITY OF PAWHUSKA

Oklahoma, ____ 192__

PURCHASE ORDER

№ 500

To ____

Address ____ Please state this Number on invoices

Via ____

Please deliver and charge the following order to the City of Pawhuska

Quantity | Articles | Price

Note: Please render all invoices in duplicate

TERMS. Board of Commissioners allow bills on the 15th and on the last day of each month ____ City Manager

7

Original

CITY OF PAWHUSKA

DAILY TIME TICKET

Date ____ 192__

Name | Hours Worked | Rate per Hour

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Dept. ____ Job No. ____

Foreman ____

8

Date ____

City of Pawhuska

№ 1050

WAREHOUSE MATERIAL ORDER

From ____ Was Used For ____

To ____ To Be Used For ____

Truck No. ____

Car No. ____

Hauled By ____ Team No ____

Quantity | Size | Merchandise | New or 2nd Hand | Charge To: Job No | Department | Credit Department | Amount

Checked By ____ Whse Mgr

Received By ____ Approved By ____ City Manager

SCALE WEIGHTS

Gross ____ lbs.

Tare ____ lbs.

Net ____ lbs.

WAREHOUSE ACCOUNTING FORMS USED IN PAWHUSKA, OKLAHOMA

1.—8½ x 14-inch page for Material Recapitulation. 2.—8½ x 14-inch page for Labor Recapitulation. 3.—8½ x 14-inch loose-leaf Invoice Register. This form is used for covering materials received. All material received, either by purchase, inventory of old stocks, or by salvage, is entered in the Invoice Register. 4.—8½ x 14-inch loose-leaf Stock Ledger. This form is used to record separately each item in the warehouse; that is, each article or piece of equipment is given one or more of these forms; only one article to a sheet. Disbursements occupy three times as much space as receipts, because disbursements are scattered. 5.—Time ticket for daily jobs. 6.—Purchase orders in triplicate; original, in white, is given to person from whom merchandise is bought; duplicate, on yellow paper, goes to warehouse manager, who stamps it "Received and checked" and returns it to City Manager; triplicate, on pink paper, remains with City Manager. 7.—Daily time ticket in duplicate, on white and yellow paper. 8.—Warehouse material order in duplicate; original, on blue paper, goes to the warehouse manager; duplicate, on yellow paper, remains with the City Manager.

maintenance of city cars. The gasoline tank is located at the warehouse, so that cars may be filled in the morning before starting on the day's work. A man is on duty at all hours to disburse materials and answer calls in case of emergency. The exact cost of construction of new jobs is also kept. A number is assigned to a job, so that material and labor may be charged to the proper job number. By this means the foreman is able to know what kind of materials to use to the best advantage, considering initial cost, maintenance, and durability. For instance, it was found that concrete culverts could be built at a little greater cost than wooden culverts, and when the life of the two is compared, the difference in cost most assuredly warrants the construction of the concrete culverts.

The Advantages

The advantages of the warehouse system, which has been in operation only a few months, are many: a complete check and record, for all future reference, is made of each item of expenditure of labor, material, or incidental expense; buying is centralized through the office of the city manager, whereby goods can be bought more intelligently; money is saved through buying in larger quantities, thereby deriving the benefits of discounts; waste is decreased by conservation and efficient handling of materials; the budget for the ensuing year's operations is readily computed; the cost of operating the city's business for any period of time is at once derived; and, above all, the public is given an opportunity to inspect every account, so that the people may know how their money is being spent in order that the public may be served.

It is the firm belief of those connected with this system, that at the close of the fiscal year the financial statement will show a marked increase on the debit side of the cash account.

School Movies to Lessen Truancy

CHICAGO is the first city in the world to adopt educational films throughout its school system. William A. Bodine, Superintendent of Compulsory Education, is quoted as believing that the movies will have a considerable influence in reducing truancy. He says that while truant officers may pick up children who are "playing hooky" and return them to school time and again, the curriculum and the teachers should be responsible for holding them there. Lesson films on geography, history, health, and nature study will prove a powerful influence in arousing a real desire to go to school. Motion picture lessons have a good deal better chance than text-books and oral explanations to penetrate the understanding of slow students. We all depend far more upon our eyes than our ears for the knowledge we get. Visualized lessons lend novelty to school work which "repeaters" have reviewed again and again. The pupils get a new slant on old lessons and are roused into enthusiasm and interest.

Radio Fire Hazard Overemphasized

WE are advised by O. H. Caldwell, Editor of *Electrical Merchandising,* that radio receiving sets are about as great a fire hazard as a white enamel bathtub. In the June, 1922, issue of that publication appears a stirring article, "Blight of the Underwriters Now Falls on the Radio Field." Mr. Caldwell believes that an article which will alarm city fire inspectors to needless activities is unfortunate. The following paragraphs are quoted from the article mentioned:

"An ordinary radio receiving set involves about as much fire hazard as a white enamel bathtub.

"Even the authors of the Underwriters' new rules freely admit that antennas installed wholly inside of buildings represent *no fire hazard whatever.*

"Such fire hazard as accompanies a radio receiving set, they point out, lies in the lightning hazard to the antenna that extends outside of the building.

"And how much lightning hazard is that? Isn't the lightning or fire hazard of an antenna extending outside a dwelling or other structure only comparable to the lightning or fire hazard of any of the following familiar structures—as much and no more:

"Electric-light wires, metal flag poles, wire clothes lines, metal roofs, metal cornices, telephone wires, metal gutters and down spouts."

The Removal of Taste and Odors by Aeration, Filtration and Other Processes--Part I

By Norman J. Howard
Bacteriologist in Charge, Filtration Laboratories, Toronto, Ont.

OF recent years in the sanitary world, the question of taste and odor occurring in public water-supplies has received universal attention. The prevention of taste is of considerable importance, and each year sees further advances made in the study not only of removal, but of prevention, of taste.

The solution of such problems seems to depend largely upon active laboratory work. Practical observation, chemical experiment, and microscopical examination should, and actually do, quite frequently indicate the cause. With this established, and its seasonal or periodic incidence recorded, prevention should be possible. The margin between taste and odor is small, and quite often complaints of taste are made when slight odors only exist. When complaints are justified, publicity as to the real cause of taste will often do much to satisfy consumers, who usually are more concerned as to the safety of the supply than as to eliminating objectionable taste. The description of taste and odor presents certain difficulties, on account of their great variety and the widely varying descriptions given. Laboratory research has frequently demonstrated that certain tastes cannot be immediately removed, but that once the cause has been established, elimination speedily follows.

KEEP THE FAITH OF THE CONSUMER

A water which has a disagreeable taste caused by iron, sulphuretted hydrogen, or algae, such as tabellaria, asterionella and synura, is generally neither unsanitary nor unhealthy, but from the esthetic, as well as from the water-works operator's, standpoint, it is highly objectionable. The average consumer thinks that as soon as the water tastes bad it is going to cause disease and immediately the sale of bottled spring water increases. The consumer frequently loses faith in the ability of the water-works department to supply a satisfactory, pure drinking water. Mr. Howard's article is a practical discussion of the means of ridding drinking water of tastes and odors.

Chief Causes of Taste in Water

At the present time, problems involving taste conditions are largely confined to excessive algae growths and the formation of chemical compounds following the sterilization of water with chlorine. The presence of iron and gases may also give rise to complaints. The discharge of various industrial wastes into the rivers and streams from which water-supplies are drawn are the causes of the most difficult problems that engineers and sanitarians are called upon to solve. It is proposed to deal with the treatment of taste and odor removal by aeration, filtration and chemical processes. Aeration is the rapid exposure of water to air with a subsequent oxidation of the organic matter, the removal of excessive carbonic acid and certain odor-producing gases. Generally speaking, if filtration is employed, aeration should follow the filtration process. If odors are present resulting from gas production, or if iron in solution is present, aeration prior to filtration is preferable.

Water containing iron in excess of two parts per million will give a taste described as inky, while water containing iron and sulphuretted hydrogen gives a particularly offensive odor, although the gas may be readily removed by aeration. The cause of sulphuretted hydrogen in water, particularly in well supplies, can usually be found by a topographical survey. Such waters may be exceptionally pure, and if the gas formation is not produced by the reduction of sulphates, it is possible that some inorganic reducing agent is the cause. In waters containing calcium sulphate and organic matter, a calcium sulphide is formed, even at ordinary temperatures, by the action of the organic matter on the sulphate. The sulphide is decomposed by the carbonic acid, sulphuretted hydrogen being liberated, which imparts an unpleasant taste to the water. Waters containing iron and gases invariably contain carbonic acid in large quantities; thus it may be necessary to aerate the water or introduce air under pressure, and subsequently apply lime or alum. The resultant precipitate would have to be settled out before filtration. Calcium hypochlorite has been successfully used in the removal of odors and iron, and has been shown to possess remarkable powers of oxidizing organic compounds. The whole question of nuisance arising from the presence of gases and iron in solution can usually be solved by aeration and filtration processes.

Taste from Microscopic Organisms

Taste and odors resulting from the presence or decomposition of microscopic organisms are world-wide. Seasonal variation in the development of algae is more or less controlled by climatic conditions. The direct relationship of bacteria to taste, except in the case of crenothrix, is somewhat doubtful. Bacterial decomposition causing taste and odor has followed the discharge of sewage and other effluents into rivers and streams deficient in oxygen. The effluents from creameries are particularly offensive, forming fungoid growths which rapidly decompose and produce foul conditions. In slow-flowing streams the discharge of putrescible matter is objectionable and may cause highly offensive tastes and odors. As these invariably occur during warm weather and frequently are of short duration, the installation of aeration plants is hardly justified, and filtration alone will do much to remove the offense. Chlorine treatment will also materially assist, by preventing the putrefying conditions.

Ordinarily, taste does not result from crenothrix, but in the presence of iron, with which it is always associated, the organism may produce a characteristic taste. There are cases on record where decomposition of crenothrix has imparted a distinct taste. Aeration followed by filtration is effective. Filtration alone has also proved beneficial, not only in removing the organisms, but in reducing the iron content. Laboratory experiments conducted at Superior, Wis., a few years ago, where the water prior to treatments was highly colored and contained crenothrix in large numbers, demonstrated the fact that crenothrix was completely removed by the filters without aeration, but that heavy deposits on the surface of the filters caused considerable trouble by shortening the filter runs.

Taste and odors arising from excessive algae growths are frequently encountered. They are, however, somewhat easier to overcome, because the definite cause is known. Their removal requires much skill and careful supervision. Treatment of such waters usually involves a pre-chemical application of copper sulphate or other reagents followed by aeration or filtration. The writer is of the opinion that water conditions vary enormously and the amount of chemical found sufficient in one case may prove totally inadequate in another. In other words, the application should be gaged, not only upon the microscopic content, but upon the physical and chemical nature of the water. The definite establishment of free and half-bound carbonic acid, and the organic matter present, are of great importance, decomposition and the solubility of copper sulphate being dependent upon these conditions. The number of algae causing trouble are so large and well known that it is needless to dwell upon the subject. It is assumed that taste and odor will develop in all cases when specific organisms are present in sufficient numbers.

During the past few years great advances have been made in the elimination of complaints arising from excessive algae growths. The brilliant research work of Sir A. C. Houston when working on the London water-supply has suggested radical changes of great importance. He was able to demonstrate in England that "in certain cases objectionable taste in waters resulting from algae growths should be removed by the addition of minute doses of permanganate of potassium. The dose varies with the oxidizability of the particular water involved, but, in dealing with the London supply, the innocuous dose of about 2.5 to 5.0 pounds of permanganate per million gallons of water was found to destroy the taste in a few minutes. The faint preliminary pink tinge inparted by the addition of the permanganate rapidly faded away and, in the practise, the consumer received a tasteless water with no pink tint, but slightly browner in color than normal."

He points out that such treatment is advisable only in special circumstances. Houston's further researches demonstrated that excess chlorine or permanganate was able to remove a certain taste which frequently followed the application of chlorine for sterilization purposes. When working on the New York supply quite recently, Brush and Hale were able to show that copper sulphate was successful in killing large numbers of organisms, including tabellaria, asterionella and synura, which had caused objectionable taste and odors. Chlorine was applied and caused a reduction in the number of organisms, though not to the same extent as copper sulphate. The most interesting feature of their work was the fact that in one case where tabellaria was found, it was shown that the number present were insufficient to cause taste, yet after chlorine was applied, objectionable taste followed. In the taste resulting from synura, the application of chlorine was increased from .3 up to .73 parts per million, and a sample taken 1,500 feet down the stream from the point of chlorine application and tested 15 minutes after collection showed the synura taste to be reduced and a combination of synura and chlorine taste to be present. Samples collected about 8 hours later showed a slight chlorine taste, but the cucumber taste from the synura had disappeared.

Brush states: "Whether the excess chlorine oxidizes the synura oil, or forms a tasteless compound, is not known, but whatever may be the chemical reaction, the important factor for water-works operators is the removal of taste." Later he says: "The increase in copper sulphate apparently more promptly and completely destroys the organisms, and thus fully exposes its oils to mechanical removal in the flow through the aqueducts and to the later chemical reaction with the chlorine at Kensico. The increase in the chlorine does destroy to some extent the organisms, but its more important action appears to be a rapid neutralization of the synura oil through a chemical process."

The work of Brush and Hale has thus demonstrated on a large scale the practicability of removing taste and odor by treatment with copper sulphate and excess chlorine, and their findings may be of great value in solving future problems of a similar nature. Some interesting observations were made by Hannan in the laboratories at Toronto, to determine if algae were sensitive to differences in alkalinity, as well as to hydrogen-ion concentration. It was noted that in a water containing a luxuriant growth of algae (chlorophyceae) which was treated with normal acids, (1) enough to nearly neutralize the alkalinity, (2) equivalent to about one-third the alkalinity, marked changes occurred. In the nearly neutralized water in warm weather, growths stopped in less than three days and died off, while in the partly neutralized sample the organism thrived. Possibly the alkalinity acts as a carrier of carbon acid between the atmosphere, etc., and the algae. When the algae are flourishing, the hydrozyl-ions will generally be found to be high, and as it is lowered, a point occurs where they may die off rapidly.

It should be mentioned that Houston found that in waters containing fragellaria and asterionella the addition of acid did not cause any ill effects on the organisms. He states: "In some experiments the dissolved carbonic acid in the water was first neutralized; in others it was increased by the addition of traces of acid; but in neither case was any constant or appreciable difference in results observed from those just described." The explanation of these two conditions is somewhat problematical, and it may be that there is a definite range for the development of each type of organism. It is well known that different quantities of copper sulphate are required to treat different organisms, and it seems hypothetical that different hydrogen-ion concentrations may also plan an important part in the development and death points of these low forms of vegetable life. This is a matter which should be demonstrated on a practical scale where opportunity occurs.

Mariemont, America's Demonstration Town

AMERICA is soon to have a demonstration town, for Mariemont, Ohio, on the outskirts of Cincinnati, made possible by the public spirit and generosity of Mrs. M. M. Emery, is gradually taking form.

Properly speaking, Mariemont cannot be called a "model" town in the sense that Port Sunlight, Hempstead and Letchworth in England are model towns. Rather, Mariemont should be called a "demonstration" town. It is an attempt to solve the housing problem through the construction of a community in which working men and men with small incomes may obtain homes either by rental or purchase, at a cost that will be properly proportioned to their wages or salaries. It will supply the citizens with public services at a nominal cost. In it will be found all the conveniences and necessities which Americans demand. It will be a real city of homes, not of tenements, lodgings and boarding-houses. But the most significant thing about Mariemont, and the point wherein it differs from other attempts to create model towns, is that it is not a philanthropy, nor in any sense a charity, but essentially a business proposition.

The builders of Mariemont intend that it shall pay an adequate return on their investment, and they are conducting the enterprise on a sound basis. Their concept of the town is that it is akin to a public service, but instead of serving the public exclusively with light and water, gas, etc., the community will provide, in addition to these customary utilities, dwellings and all those things that go to make convenient, hygienic and attractive homes at little more than actual cost, leaving a reasonable but not excessive margin as reimbursement for those that have invested their capital in the project.

John Nolen, city planner, of Cambridge, Mass., and his associate, Philip W. Foster, drew the plans on which Mariemont is being developed. The plan, which is shown on page 310, provides for a town center with its village green and public buildings, town hall, library, club house, churches, hotel, community building, theater, post office, bank, stores, and public market. Ample provision is also made for schools and playgrounds, athletic fields, stadium, gymnasium, tennis courts, varied types of parks, bath-house, lagoon, field house, park shelter, and reservations on the bluffs above the river, from which the public may secure attractive views.

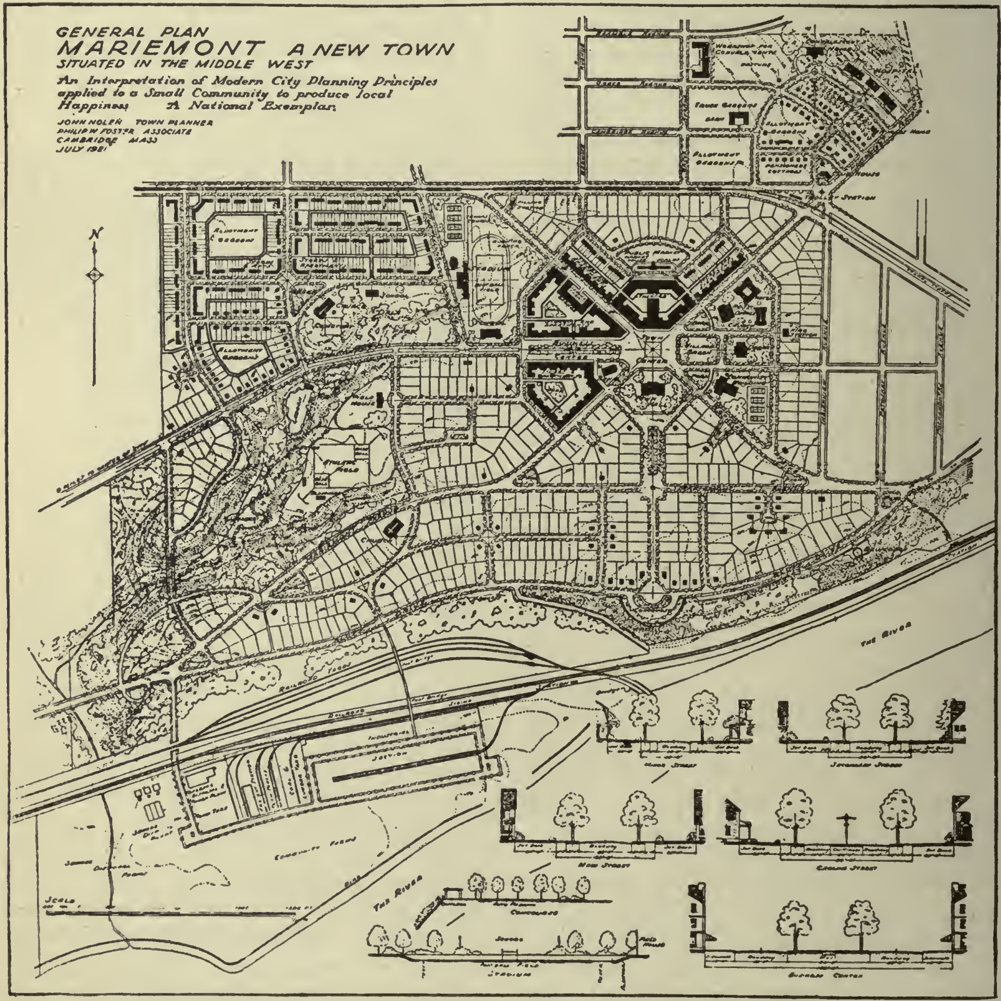
The property includes 365 acres, one-half of which has been divided into 750 house lots, which will result in a density of 6 or 7 families to the acre. Group houses, apartments, semi-detached and detached houses are also provided, and the standards are equal to those of the best garden city developments in England. All the houses are being carefully designed and will be constructed of brick or other permanent material. They will be provided with all modern conveniences, including electricity and steam heat from a central plant. The initial cost of the transportation development, recreation centers, sewage disposal, steam heat and electric light for dwellings will be borne by the Mariemont Company. The houses, except those that are to be built by the company for rental, will be constructed by the purchasers of lots. To aid such persons, a subsidiary building and loan association is being provided which will make available the necessary funds at comparatively low rates.

Lots Ample in Size

The lots are expected to sell from $500 up. They are ample in size, ranging from lots 20 by 100 feet for group houses, 30 by 100 feet for semi-detached, up to lots with frontages of 50 to 80 feet and a depth of 120 feet for detached dwellings. One-half the property is in lots, one-quarter in public property, and one-quarter in streets. Fifty acres are devoted to parks alone.

When completed, Mariemont will have a population of approximately 5,000, with an immediately surrounding population of approximately 10,000 using the town as a center.

The underlying purpose of Mariemont is to prove the practicability of constructing as a business enterprise model communities which will combine the advantages of community life with the freedom of the country, and which will prove that good housing and good town planning in America are not dependent upon philanthropy, but that they will pay for themselves as legitimate business ventures. Mariemont will be watched with more than ordinary interest by city officials and town planners throughout the United States, and if it succeeds in any way comparable to the expectations of its promoters, it is likely that similar projects will be undertaken in other communities.


GENERAL PLAN
MARIEMONT A NEW TOWN
SITUATED IN THE MIDDLE WEST
An Interpretation of Modern City Planning Principles applied to a Small Community to produce local Happiness A National Exemplar
JOHN NOLEN TOWN PLANNER
PHILIP W FOSTER ASSOCIATE
CAMBRIDGE MASS
JULY 1921
N
ALLOTMENT GARDENS
THE RIVER
THE RIVER
INDUSTRIAL SECTION
STADIUM
BUSINESS CENTER
SCALE

The Mariemont Company, following in general the lead of Letchworth and other English garden cities, is to create in the Cincinnati district a town or suburb on the same general lines, but put on a business basis in accordance with American ideas. The proposal is intended as an example or demonstration to be repeated in many places.

The Mariemont General Plan, covering a tract of about 365 acres, provides for a town with its village green and public buildings, stores and amusements, school sites, playgrounds and parks, and complete and attractive housing accommodations for wage-earners of different economic grades. The normal lot sizes for the detached houses range from 50 to 80 feet frontage, with a depth of 120 feet. The houses will be provided with all modern conveniences, including electricity and steam heat from a central plant. Adequate provision will be made for the proper maintenance of the property as a complete town or suburb.

The Design of the Street System in Relation to Vehicular Traffic

The Author's Conclusions from His Paper Before the Recent Annual Meeting of the National Conference on City Planning, at Springfield, Mass.

By Ernest P. Goodrich

1. VEHICULAR traffic is found to vary in amount at the business point in a community in proportion to its size.

2. The total radial street traffic at equal distances from large communities of varying size is proportional to the population of each community.

3. The total radial street traffic at different distances from the center of each community varies inversely as the distance from the center.

4. A definite relationship exists between the amount of through traffic and the total number of automobiles licensed in that part of the country in which the community is located.

5. Through traffic may be expected to vary in the future in proportion to the degree of saturation of automobile ownership.

6. The amount of vehicular traffic originating in, and destined to, residential districts, is to-day approximately one vehicle per day per family.

7. Vehicular traffic from and to freight stations bears a definite ratio to the population and its proportion employed in industry, depending to some extent upon the dominating types of manufacture.

8. The amount of vehicular traffic created by industry may be closely approximated on a square foot basis of land and of floor space thus employed.

9. An industrial survey is the best method of approaching the creation of a city plan, because it will provide data on the basis of which the future use of the streets can be estimated.

10. A zoning ordinance will definitely limit the amount of street traffic and provide the basis upon which it may be estimated.

11. The growth of communities shows that a general law is followed, upon the basis of which estimates of future population can be made with considerable precision.

12. Cities will grow to a definite size, depending in large measure upon the distance to larger surrounding communities.

13. The distribution of future population throughout a community can be closely estimated on the basis of the law of growth, the limit set by the zoning ordinance, topography, and social conditions which the community can establish.

14. In general, the density of population varies inversely as the distance from the center of a community.

15. The traffic during the maximum hour of the day varies from 115 to 140 per cent of the average hour.

16. The traffic during the maximum week is approximately double the average of the year.

17. Roadway widths should be designed on the basis of the number of lines of traffic which they must handle.

18. Traffic conditions at intersections limit the number of vehicles per line per hour to a maximum of about 600.

19. The main thoroughfares in single-family residence districts should be spaced not to exceed 3,000 feet apart; 2,000 feet in two-family house districts, and 1,250 feet in multi-family house districts.

20. In industrial districts the main thoroughfares should not be spaced more than 750 feet apart.

21. The total number of radiating streets which should be provided in any community can be determined on the basis of the amount of traffic which is to be expected.

22. The total width of the roadways of radiating streets can be determined on the basis of the traffic which must be carried.

23. The area allocated to zones for different uses in a community can be determined on a scientific basis.

24. The whole street transportation and street design problem can be worked out on a scientific basis.

Addition to Taunton Municipal Lighting Plant

New 6,250-K.V.A. Turbo-Generator with Boilers and Switchboard Is Installed

By Arthur L. Nelson
Jackson & Moreland, Engineers, Boston, Mass.

THE Taunton municipal lighting plant has recently been enlarged by the addition of new generating equipment. The work, which involved a new generating unit, together with boiler plant, switchboard and all accessory equipment, modification of the building and the installation of intake and discharge tunnels for condenser water, has been handled under the direction of Francis P. Callahan, Chairman of the Taunton Municipal Light Commission, who was appointed by Mayor Coughlin. The work was completed in about fifteen months' time, at a cost of $75 a kilowatt, a remarkably low figure at the prices which then prevailed, and since starting up has been giving very satisfactory service.

During the winter of 1920, the question of obtaining increased capacity at the plant was taken under consideration by the Taunton Municipal Light Commission. Engineers were retained by the Commission, and a careful study was made of the situation. The possibility of purchasing power was carefully looked into, and comparative estimates were prepared of the cost of installing additional generators in the plant and of operating such machines. It developed that the power could be generated in the Taunton municipal lighting plant at approximately the same cost at which it could be purchased, and the Municipal Council, after consideration, decided to go ahead with the enlargement of the station under the direction of the Commission.

What the Problem Involved

The problem of obtaining increased capacity in the plant involved a number of very interesting points. The existing plant at the time the work was undertaken consisted of two McIntosh-Seymour steam engine units rated at 400 kilowatts each, one vertical Curtis type turbo-generator, rated at 1,500 kilowatts, and one horizontal Parsons type turbo-generator rated at 1,500 kilowatts. All of these units operated on saturated steam at approximately 145 pounds pressure. The old boiler plant consisted of six 200-h.p. Heine boilers and one 500-h.p. Keeler boiler. Some of these boilers were more than twenty years old. It was, of course, very desirable that any new unit installed in the station be operated at a much higher pressure in order to get proper economy. It was also practically necessary that superheated steam be used for such a unit in order to protect the turbine blading against the erosive effects of wet steam.

The question of installing superheaters in the existing boilers was investigated, and was considered not feasible. In addition to this, there was the fact that the existing piping was not suitable for superheat, since it contained cast iron fittings and valves with cast iron bodies and brass trim. A further point was involved in connection with the McIntosh-Seymour engines, which would probably not have operated satisfactorily on superheat.

After careful consideration, it was decided to install at the West Water Street end of the station a new 6,250-K. V. A. turbo-generator with a new boiler plant to give the required amount of steam at the proper pressure and superheat and to parallel the new unit with the old plant on the station bus. Under normal conditions the new boiler plant and the old boiler plant are operated independently as two entirely separate plants, but a cross-connection is provided between the two steam headers, equipped with reducing valves, safety valves and a de-superheater, so that the new boiler plant can be used to supply saturated steam at 145 pounds pressure to the older generating units, if operating conditions should make this desirable.

In the engine room of the existing plant

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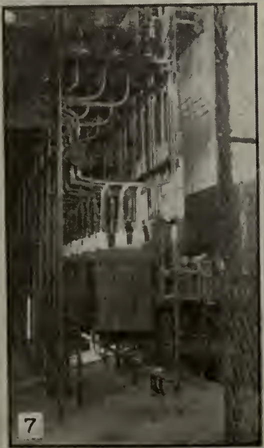
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VIEWS OF TAUNTON'S MUNICIPAL PLANT

1.—New generating unit in background

2.—New boiler plant

3.—Fuel oil burners and fire control system

4.—Centrifugal boiler feed pump

5.—Concrete switching platform with new board

6.—River end of switching platform

7.—Station bus, oil circuit breakers, instrument transformers, disconnecting switches, etc., mounted on pipe framework

8.—Exterior of station

there was room for the installation of an additional turbine unit, and in the boiler room space for the new boilers was provided by the removal of existing offices and a considerable amount of remodeling of the building.

The Generator

Figure 1 shows in the background of the picture the new generating unit. This is a Westinghouse turbo-generator with a Parsons type double flow turbine operating on steam at 200 pounds pressure and 100 degrees superheat. The generator delivers to the station bus 3-phase alternating current at 2,300 volts and 60 cycle. The unit is set on a composite foundation of structural steel encased in concrete. The operating platform around the machine, as will be noted, is at a higher level than the old engine room floor in order to give space for condensing equipment. Underneath the unit, and carried on concrete piers, is an Elliott surface condenser. The air pumps on this condenser are of the steam ejector type with jet inter-coolers. The circulating pump and condensate pump are mounted below the condenser near the water end and are driven on the same shaft by a combined motor and steam turbine drive. This combined drive was used for reliability and also for the proper working out of the heat balance in the plant.

The Boiler Plant

The new boiler plant is shown in Figure 2, which is a view in the boiler room looking toward the West Water Street end of the station. The plant consists of two 652-h.p. Stirling water-tube boilers, shown in the background of the picture, which are equipped with B. & W. superheaters and designed to deliver steam to the turbine at 200 pounds pressure and 100 degrees superheat. The boilers at present are operated on fuel oil, as is the old plant, and are fed from a Hammel fuel oil pumping set. They are both equipped with Leahey burners and with the Merit system of fire control, which is shown in Figure 3.

From Figure 2 it will be noted that the boilers are set on a structural steel foundation, which places the operating floor 15 feet above the existing basement floor on which the old boilers are mounted. This has been done in order to make it possible to change over the battery to suit it for coal firing at a later date, if that becomes necessary or desirable. To further facilitate the possibility of changing to coal firing, the boiler foundation and supporting columns have been designed to carry a future coal bunker, and in the ash-pit of each boiler has been placed a slab of cinder concrete, which may be broken out to permit the installation of stokers.

Water is fed to the boilers by a set of two Alberger centrifugal boiler feed pumps, driven by steam turbines and controlled by differential pressure regulators. One of these pumps is shown in Figure 4.

The level of the water in the boilers and the admission of boiler feed is controlled by a Stets feed water regulator, which is shown in Figure 2. The entire control of the boiler feed is therefore automatic.

The Switching Equipment

In connection with the new plant, an entirely new remote-control switchboard and switching structure was installed for the older generator units as well as for the new unit. This switchboard and the switching structure are shown in Figures 5, 6 and 7. Figure 5 shows the concrete switching platform with the new board. In the middle are the exciter, generator and feeder panels. To the left of this main board are the panels which control station lighting and power and current from the storage battery to operate the oil circuit breakers. At the far end of the platform are the exciters. The river end of the switching platform is shown on Figure 6, and carries the operator's desk and telephone booth and also three constant current transformers for street lighting circuits, together with their control panels. At the end of this platform is seen the storage battery room, from which comes the current to operate the circuit breakers. The switching platform, as will be noted, is at the same level as the platform around the new turbo-generator, and is approximately 3 feet above the old engine room floor.

Below the switchboard platform are the station bus and the oil circuit breakers, instrument transformers, disconnecting switches, etc., mounted on a pipe framework. The entire switching structure is enclosed by a wire grille to prevent accident. At the West Water Street end of the switching structure are placed the generator rheostats, which are controlled from the switchboard on the operating floor above.

There were also installed in connection with the new plant, new concrete intake and discharge tunnels, with sufficient capacity to care for an additional unit when it is needed. A Rex revolving screen manufactured by the Chain Belt Company has been installed in the well at the mouth of the intake tunnel to remove leaves and other rubbish from the circulating water and prevent the blocking of condenser tubes.

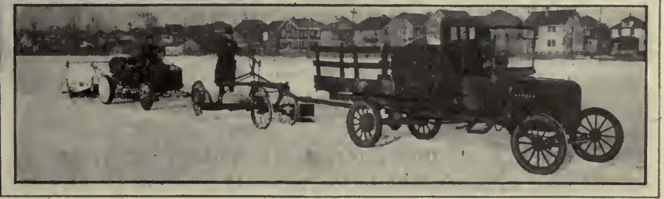
At the completion of the work the grounds around the plant were graded, walks and roads laid out and grass seed sown, and a 7-foot wire fence was erected around the entire plant. Also, all the interior walls in the engine room and boiler room were painted, as well as the window sash, rails and all exterior trim. Figure 8 is a picture of the West Water Street end of the station and shows the fence, the grading and the new walk placed in front of the station.

Two other features of the station are worthy of comment. A small but well-laid-out repair shop and stock-room has been added, with two lathes, a grinder, a power hack-saw and other tools, besides bins and racks for storage of supplies. In this shop necessary repairs will be made on valves, machine parts, etc. Also, a toilet with a shower-bath and a small laundry with washing machine have been installed for the use of the plant operatives.

The city of Taunton has now a modern plant giving good economy and operated on sound business principles. Much credit is due to the present city administration in Taunton for the way in which it has handled the entire work.

The design of the new plant was carried out by Jackson & Moreland, engineers, of Boston, who also supervised the work.

ABOVE.—THE RINK IN USE



BELOW.—CLEANING THE RINK WITH TRUCK AND TRACTOR-DRAWN GRADER AND SCRAPER

The Care of Municipal Skating-Rinks

By T. H. Fewless

Superintendent, Recreation Commission

THE chief skating-pond in Highland Park, Mich., shown in the illustration above, is about ten acres in area, together with a hockey pen adjacent to the pond.

Of particular interest is the manner in which the ice is built up and cared for from the very start of the winter season. The pond is flooded in the fall, and after the first freezing it is used until 10 o'clock at night, at which time a power scraper and brush are used to remove the snow from the ice. Then, by the use of a 1¼-inch hose, using about three sets, the ice is sprinkled from that time until 10 o'clock the following day. In this way the surface of the ice can be kept smooth, filling up all the small cracks and furnishing a very satisfactory surface for the skaters each day.

The Menace of Traveling Carnivals

By John J. Birch, Pd.B.
Schenectady, N. Y.

ONE of the most demoralizing influences that have come in recent years into the summer amusement life is the traveling carnival. Last summer there were about 150 carnival companies with an average personnel of from 100 to 125 per company, making a total of from 1,500 to 1,800 public entertainers giving their showings in every state of the Union.

As a class, they are a menace to the community into which they come. They represent commercial amusements at their very worst, not merely because of cheapness and vulgarity, but rather because of brazen defiance of civic virtue and moral decency. The ministers, editors, reform workers and merchants are practically unanimous in their stand against allowing these marauders in their communities.

Methods of Operation

The carnival companies commonly arrive on Sunday and occupy a vacant block near several car lines or in close proximity to the center of the town. Here twenty-five or thirty tents are erected for the various concessions, such as the "Snake Charmer's Den," tub games, ball swings, Derby races and wheel booths.

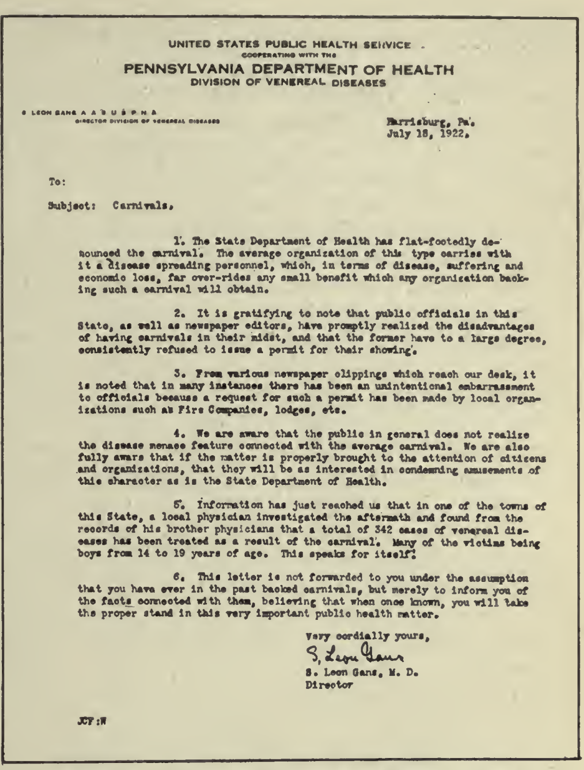
Ostensibly, they come to a city under the auspices of some local fraternal organization or for a police or firemen's "benefit" in order to enlist the interest of more local people who will help to make their showing a financial success. The real reason why they generally come to a town under the auspices of a popular local order is because the majority violate one or more sections of the various state laws prohibiting lotteries, games of chance, obscene shows, etc., and the influence of some local organization is needed for protection from police interference.

The carnivals offer the organization a fifty-fifty proposition or a promise to boom the town, etc. It looks good from outward appearances and undoubtedly many good people go innocently out of curiosity. While there, they see something which shocks them and perhaps they protest verbally; but in many cases before the machinery of reform gets into motion, the carnival has disappeared, leaving behind it a trail of moral filth and slime for the town to clean up. It may take years for a community to recover from the effects of the visit of one unclean carnival. The promoters themselves are fully aware of this; but so long as they can "put it over once more" without dissenting voices, the chance is taken.

Gambling at Carnivals

Nearly every kind of gambling wheel and lottery is operated at these carnivals. The most common, however, is the fortune wheel, of which there are innumerable modifications, but all operated on the same principle. Suspended from a vertical support is a wheel, varying in diameter from two to three feet, on the rim of which is painted a series of numbers. The wheel is spun and allowed to revolve until it comes to rest. Further up on the support, just above the rim of the wheel, is a small index which points to a number when the wheel stops. Painted on a counter near the wheel is a series of numbers upon which the players place their money. If the wheel stops at a number corresponding to one on the counter, the person who has placed the required amount of money thereon wins the prize, whatever it be. Sometimes, instead of numbers being painted on a counter, wooden or pasteboard strips having numbers printed thereon are sold, and after the wheel has been spun and stopped, the person possessing a number corresponding to the one to which the index points receives the prize. These wheels are usually gambling devices in the strictest technical interpretation of the term—no skill whatever is involved, and the loser gets nothing at all. They are very profitable, netting from 3 to 500 per cent.

Some of the wheels are accurately balanced, so that it is a matter of pure chance just where the wheel will stop; but in many cases they are so adjusted as to stop at a number which is not printed on the counter



UNITED STATES PUBLIC HEALTH SERVICE
COOPERATING WITH THE
PENNSYLVANIA DEPARTMENT OF HEALTH
DIVISION OF VENEREAL DISEASES

S. LEON GANS [illegible]
DIRECTOR DIVISION OF VENEREAL DISEASES

Harrisburg, Pa.
July 18, 1922.

To:

Subject: Carnivals.

1. The State Department of Health has flat-footedly denounced the carnival. The average organization of this type carries with it a disease spreading personnel, which, in terms of disease, suffering and economic loss, far over-rides any small benefit which any organization backing such a carnival will obtain.

2. It is gratifying to note that public officials in this State, as well as newspaper editors, have promptly realized the disadvantages of having carnivals in their midst, and that the former have to a large degree, consistently refused to issue a permit for their showing.

3. From various newspaper clippings which reach our desk, it is noted that in many instances there has been an unintentional embarrassment to officials because a request for such a permit has been made by local organizations such as Fire Companies, lodges, etc.

4. We are aware that the public in general does not realize the disease menace feature connected with the average carnival. We are also fully aware that if the matter is properly brought to the attention of citizens and organizations, that they will be as interested in condemning amusements of this character as is the State Department of Health.

5. Information has just reached us that in one of the towns of this State, a local physician investigated the aftermath and found from the records of his brother physicians that a total of 342 cases of venereal diseases has been treated as a result of the carnival. Many of the victims being boys from 14 to 19 years of age. This speaks for itself.

6. This letter is not forwarded to you under the assumption that you have ever in the past backed carnivals, but merely to inform you of the facts connected with them, believing that when once known, you will take the proper stand in this very important public health matter.

Very cordially yours,
S. Leon Gans
S. Leon Gans, M. D.
Director

JCF:W

FIGHTING THE MENACE IN PENNSYLVANIA

or pasteboard or wooden strips. Other wheels have brakes so arranged as to be electrically controlled by the operator, thus causing them to stop at any desired place. Other gambling devices involve a bit of skill, as throwing balls at dummies or in small pockets, or pitching rings over dolls or jack-knives, etc., but in general the element of skill is slight or suppositious.

There are also many so-called "games" being played at carnivals, the most popular among which are the "Derby Horse Racing Contest," "Round the World Aeroplane," "Yacht Race," and others of various names. The illegal thing about all such is that a charge is made for the privilege of playing and that a prize is offered to the winner, the losers receiving nothing for their money invested.

By legal decision, and after an examination of the paraphernalia and questioning of witnesses, it becomes a known fact that wheels and games at carnivals are mechanically crooked—that is, controlled at will by the operator and made to win or lose at his discretion. The surest proof that carnivals need crooked dice, marked cards, controlled wheels and the like, can be found in the pages of the organs of the trade, which are loaded with ads for swindling paraphernalia. If the carnivals are not debased by cheaters and fraudulent methods, why should the manufacturers of cheaters' devices seek them as customers? One that does not have crooked devices among the gambling paraphernalia is indeed an exception. The carnival managers have frequently admitted that they could not make their performances financially successful if they eliminated all gambling schemes and trick devices; that is, if the unlawful of the carnival were left out, they would have to close up and disband.

The Prizes Offered

Every conceivable sort of article is used as a prize, and the display of them reminds one of a small department store. The operators of the booths can well afford a large display because of the very low cost at which the majority of the prizes are purchased. The most popular, perhaps, are the kewpie dolls, which wholesale at $35 per 100, but which represent to the fair operator a net return of several dollars each. Some of the large concessions offer manicure sets as prizes which they claim are worth $10 each, but which are advertised in the trade journals for $15 per dozen. In some localities, Chinese lucky rings branded "sterling" are used as prizes. The hawkers represent them as sterling silver having a face value of $1 each. The fair manager can purchase them for $12 per gross, or approximately 10 cents each.

Of the small articles used as prizes, necktie pins and cuff links are the most popular. The percentage is unusually high on these, for they are purchased for $5 or $6 per gross, or less than 4 cents apiece.

The Immoral Features

Carnival companies invariably include in their "talent" one or more indecent shows under such names as "Living Pictures," "The Dancing Mermaids," "Oriental Dances," etc. Their advertisements, however, are replete with such phrases as "a clean show," "nothing to shock the most fastidious," "bright, clean and moral." Advance agents often go to the city officials and ask them to attend a special advance presentation of some of these features. During this special performance there is nothing in the least immoral or suggestive, and it meets the approval of the witnesses. But just as soon as they have left, the performance takes on a different aspect.

One of the most common is a show known under various names such as "Hoola-hoola," "Hawaiian Village," etc. It is referred to as a dance, but the performers, who are always woman, are more or less nude, and give a five-minute series of obscene contortions and suggestive pantomines to men only. Generally after that performance the barker inveigles as many men possible into an adjoining tent by a pretense that they may see the "real thing." A plain statement of conditions at this aftershow would be too obscene to be told or sent through the United States Mail.

Some of the carnivals, because of the immorality connected with them, may be fitly described as traveling dens of iniquity. Prostitutes who are either attracted to these carnivals or permitted to accompany them leave behind a trail of physical as well as moral contamination. Their trade is practised either in a side apartment during the hours of the showings, or at a hotel or house to which men are directed.

The Department of Health of the Commonwealth of Pennsylvania made the statement that reports from the state clinicians as well as local practitioners have indicated that the so-called carnival, by reason of its personnel, invariably adds to the incidence of venereal disease in the locality wherein it exhibits. These so-called carnivals are a direct menace to public health, the women employees being for the most part infected prostitutes. Evidence that the carnivals carry immorality and disease around with them throughout the whole of the United States is plentiful.

Perhaps there are few attractions at the carnival more appealing to the children than the pink lemonade booths. And perhaps it is the universal belief of parents that there is nothing more harmless for the children than this drink. But there is as much difference between homemade lemonade and circus drinks as between a mountain brook and a muddy river. Nothing in the world could be more unsanitary than many of the juice stands at carnivals, where thousands of lips have touched the same slice of lemon, which is used over and over again until worn out. The glasses are seldomly washed, or at best only dipped in dirty water. Mothers who at home are models of cleanliness allow their children to drink lemonade made of citric acid, red dye and dirty water stored in an unsanitary wash boiler or barrel and served from filthy glasses, from which hundreds have previously drunk. Enough of the ready mixed color and acid can be carried in a suitcase to make several hundred barrels of lemonade and orangeade. A few dozen will last through a whole week, for the lemon rinds are used over and over again.

Eradicatory Measures

Various measures have been taken to eradicate the evil influence of the carnivals. Some cities have banned them altogether, while others have made ordinances requiring them to pay various sums, some as high as $150 or $200 per day for the privilege of showing. There is not a state in the Union that does not contain some city that has taken action against carnivals. But these means are unsatisfactory, for as city governments change, the local policy regarding carnivals is sometimes altered also. The time is not far distant when all the states will enact laws prohibiting carnivals from showing. When it is remembered that the patronage of the 150 carnivals showing in the United States, with an average attendance of 1,000 persons per day for 6 months, totals 18,750,000 persons, the enormity of their influence is realized.

Such measures must come, and will come, when public sentiment has been thoroughly aroused and awakened to the evils done by the traveling and itinerate shows.

Comparison of Subdrainage of Highways by Deep Side Ditches and by Tile Drains

By Charles M. Upham
State Highway Engineer of North Carolina

AT the present time, road surfaces are standardized to such a degree that we can practically be assured of satisfactory results if they are constructed in accordance with standard specifications. In many roads, sections of the road surface have broken up, while in other places the surface has proved strong enough to carry the traffic. Investigation has shown that the cause of the failure was not due to the road surface itself, but to the failure of the subgrade or road foundation. This has started a thorough investigation of the subject, and before very long valuable data will be available. It is practically accepted that the bearing power of any soil or subgrade will vary inversely with the amount of water that the soil or subgrade contains. With this fact to work upon, it is readily seen that the more water present in any soil, the less will be its bearing power or carrying capacity.

What Is Subdrainage?

Subdrainage is another way of saying stabilization of subgrade or road foundations. Although we may go into this subject very carefully, very scientifically, and with much detail, we simply mean excluding moisture from the roadway, or draining moisture away from the roadway. If we look over some of the earlier highway literature, we find that one of the most emphasized details of construction was drainage of the highways. Nearly everyone would talk drainage and plan for drainage systems, but when they began to construct a road, the drainage system was generally excluded on account of its cost, and this money was usually spent in the construction of the surface. That this was an unwise practice has been too often proved. Many scientific data are now available which give us more information relative to the regulation of moisture in the subgrade and the practice of stabilizing road foundations.

Low Capillarity Essential to Good Subgrade

The extent of the effect of moisture on any subgrade depends upon the kind of soil in the subgrade, so that the selection of soils which go to make up the subgrade is one of the most important factors in road construction. This detail is many times overlooked. In clay soils it has often been found that the soil nearer the surface of the ground is more satisfactory for subgrade construction. This undoubtedly is due to the fact that the soil has been broken up by frost action, and that the finer material and colloidal matter has been washed out by the rains.

In the South there is what is known as top soil, which is a sand-clay composed of broken-down rock, from which the finer colloidal matter has been washed. With the varying effects of moisture on the different materials, it can be seen that the selection of soil for a subgrade is very important, and it is absolutely necessary to get a material of low capillary attraction and resulting high bearing value in the top of the subgrade. Many times the mistake has been made of taking all material from cuts and throwing it indiscriminately in the fills, whereas it would be to the great advantage of the road to select the material generally from the top of the cut and place this material on the top of the fill. In that way we should have the better material in the top of the subgrade, and this would afford a higher bearing power for the construction of a road surface, which would have the same effect as increasing the depth of the slab.

Stabilizing the Subgrade

It has been found and accepted by road builders that the most economic method of stabilizing the subgrade is simply to take away the water from the road foundation, or, better still, keep the water from getting into the subgrade. Therefore, one of the first principles in road construction is to so construct a drainage or subdrainage system as to pipe away all springs or water from any source whatever, so that at no time would it be possible for any of this water to enter the subgrade and thus reduce the bearing power of the subgrade.

This can generally be done by constructing ditches parallel with the roadway, the bottom of which is from 10 to 18 inches below the subgrade or foundation of the roadway. When a road is hard-surfaced, it prevents any water from entering the subgrade from above, at least until it has run to the edge of the pavement. The lateral side ditches intercept any water from horizontal capillarity or side seepage. There only remains, then, the water which rises up through the ground by capillary action. This is the most difficult and expensive water to take care of, and it can readily be seen that on account of the varying of capillary action in different soils, the selection of subgrade material is very important. It can safely be said that the amount of water drawn up into the subgrade depends upon the supply and the class of material in the subgrade. Generally speaking, the coarser the material, the less the capillary action, and the reverse is also true to the extent that the finer the material, the greater the capillary action; within certain limits the capillary action in the coarser material is quicker than in the finer material, but the ultimate amount of water raised, and the height it is raised, are not so great in the coarse material as in the fine material. Inasmuch as it is the amount of water present in the subgrade that influences the stability of the subgrade, it can be seen that in selecting material for the road foundation the coarser material should be selected.

From experiments performed by the Bureau of Public Roads it has been determined that the capillary water in a subgrade is greatest directly underneath the hard surface slab, which means that the part of the subgrade which should be the most stable is in reality greatly reduced in bearing power. The problem, however, is to substitute for this portion of the subgrade a material which is less affected by the amount of water, or which has lower capillary action; which also means that the water does not rise so high in this particular selected material. This is another way of saying that the subgrade is more completely stabilized by this selected material, because the amount of water in the subgrade directly underneath the slab has been excluded by the selected material.

The Effect of the Cross-Section

Various cross-sections of roadways have been designed for the purpose of doing away with these various conditions, and, of course, one of the universal means of dealing with this matter is the side ditch, which intercepts any water from the sides, which would otherwise get into the subgrade.

This brings us up to the comparison of the side ditch and the tile underdrain, which generally consists of a ditch at the bottom of which is a pipe laid with loose joints, the ditch then filled in with crushed stone.

It has been thought by many that since this was called a drain it effectively drained all the water from the subgrade, but, undoubtedly, in many soils this drain did little or no good other than to intercept any free water which might otherwise find its way to the subgrade. In other words, it is quite likely that this drain was only effective in taking away free water that came from the surface or seeped through the ground horizontally.

It is quite doubtful if any drain ever carried away any appreciable amount of water which rose by capillary action. Therefore, it can be seen that neither the open ditch nor the tile underdrain is sufficient to cope with the capillary water in any subgrade. We must therefore design against capillary water in addition to the longitudinal drains.

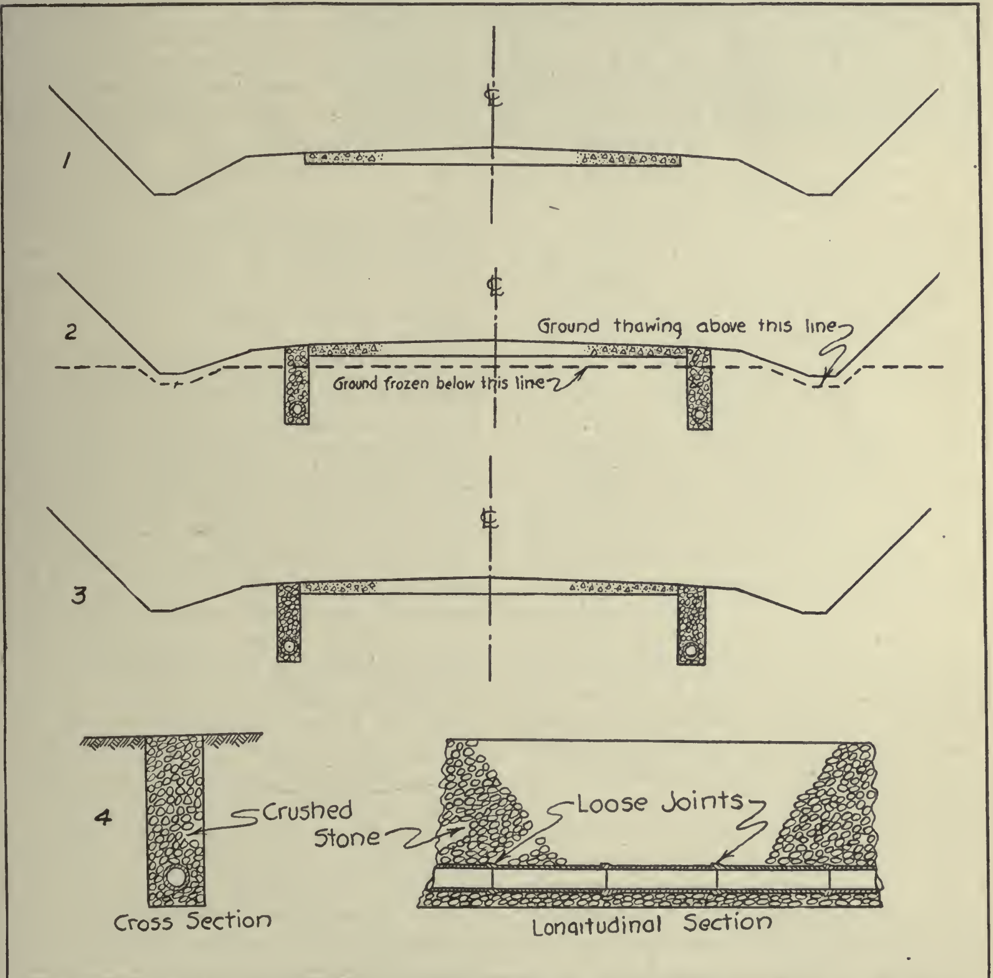
Location of Tile Underdrains

In the subject of tile underdrains there is a question as to their location. While the longitudinal underdrain will serve the purpose of intercepting water which would otherwise find its way to the subgrade, quite often transverse drains are necessary for the purpose of taking away water from springs or streets which carry water underneath the road. The number and location of these drains depend upon conditions and the amount of water which finds its way underneath the roadway. To carry the question of transverse drains a little further, and to more completely develop the idea, selected material which can be easily drained is sometimes placed underneath the road surface in thicknesses varying above

2 inches. This material should be connected up by drainable material to the nearest drain or ditch. This is another very effective means of reducing the amount of water underneath the road slab, which, again, is a means of increasing the bearing value of the subgrade or road foundation.

The location of a lateral or longitudinal drain has been the subject of considerable discussion. One suggestion is to place the drain directly underneath the ditch, but this seems to be an improper place, on account of water flowing in the ditch carrying the finer silt particles into the drain, which gradually makes it less effective. It is undoubtedly better to construct the drain higher up on the shoulder and a little nearer the roadway surface.

There are many methods now being devised for the treatment of subgrades in order to overcome the water of capillary, and, to insure more complete stabilization, various chemicals are being used to experiment in the treatment of subgrades. Water-gas tar is a substance which has been used in subgrade experimentation. Other experiments show that portland cement has an advantage in stabilizing subgrades. Experiments



TYPES OF DRAINAGE SYSTEMS FOR ROADS

1.—A deep side ditch acting satisfactorily as an intercepting drain, but acting as a hazard to traffic and not completely correcting the capillary water under the road surface. It is impossible to maintain this ditch by machine.
2.—A gutter ditch providing drainage for free surface water while the tile drain and lower strata are frozen. It is easily maintained by machine.
3.—Combined gutter ditch and intercepting tile drain, easily maintained by machine.
4,—Cross-section and longitudinal sections of tile drain shown in 3.

with low capillary material suggest that cinders, sand, gravel, or crushed stone will bring about a stabilized subgrade only in a different manner. In all cases, the treated or selected subgrade material should be connected with the tile drains or ditches or drainage system, by means of the most drainable material, and the subgrade, even if built of selected material, must be so constructed as to drain as completely as possible.

Open Ditch vs. Tile Drains

We are now at the question of the comparison of the open ditch and tile drain. Neither of these is a cure-all. In some instances they help materially, but in other cases their effect is slight. There is a particular experiment which has been watched for several years. It is a surface-treated macadam road. This particular road broke up every spring as the frosts came out of the ground. A complete investigation was made, and what remained of the macadam surface was cleared away. Although it was expected to find a spring underneath the roadway, the only thing which was found was a layer of clay somewhat over an inch in thickness. This layer of clay was slightly tilted, to such an extent that water would percolate through the ground until it reached the impervious clay, and then it would follow along on top of the clay and appear underneath the road surface. This so weakened the road surface and subgrade that it broke up each year. It was noticed that this stratum of clay was underlaid with a very coarse and easily drained sand, and the water which had collected was easily drained down through the hole cut in the clay stratum. This matter is being mentioned in order to show that the flow of water in certain soils is very slight and that tile drains will have very little beneficial effect.

In many instances it has been found that the flow of water in different soils varies from 1 foot a day up to 20 or 30 feet a day in clay soils. There is some question relative to the depth of drains and ditches. It is very evident that a ditch will intercept water the same as a tile underdrain, and also that the tile underdrain will have the same effect in intercepting water as an open ditch. It is assuming that both are maintained. It is quite evident that it is more difficult to maintain a ditch than an underdrain on account of the fact that in tile drains the pipe is always available for the free water, whereas if an open ditch becomes stopped up, the free water is backed up and allows a bigger supply of water for capillary action in the subgrade. The deeper the ditch, the more difficult it is to maintain. One more important point is that a deep ditch must be maintained by hand, which should eliminate this kind of ditch for consideration except where the depth of the ditch is necessary for water drainage. In many instances a shallow ditch can be maintained by a road machine.

The value of a tile drain is sometimes completely lost under certain conditions of frost, and in many instances the effectiveness of a tile drain is practically of no value, although there may possibly be a very slight movement of water through frozen ground. In this particular instance, no doubt the open ditch would be more effective, especially in taking care of any surface water, which through certain weather conditions, such as a thaw, might be present.

Probably the most critical time for any road is after the ground has been frozen for two or three feet. Under these conditions the effect of the tile drain would be greatly reduced. If this freeze is followed by a thaw, the surface of the road is first affected and this condition brings about an excess of water on the surface of the road and directly underneath the slab. On account of the frozen material underneath, the free water cannot pass down into the drain, and thus, in this instance, the value of a tile underdrain is reduced to a minimum. A more effective solution in this case is a shallow gutter. By this is meant a gutter from 10 to 18 inches below the subgrade, with the shoulders and slopes so constructed that surface water and any free water occasioned by a thaw can readily find its way to the gutters.

It is assumed that all underdrains and ditches are constructed to grade and will thus quickly carry away any free water. Another very important point is that any free water which might for any reason exist in the subgrade must have a means whereby it can pass off immediately to the drain or ditch. In the case of ditches the existing conditions must be thoroughly studied before the location and depth are determined. If you are constructing a road on a fill, there is, of course, no water to intercept, but in a cut which is on light grades or on sidehill work, an intercepting ditch is very effective. On the heavier grades it is not necessary to make the ditch as deep as on the lighter grades, for the grade of the roadway has the same effect as the deeper ditch. If the ditches drain readily, all indications seem to point that it is seldom necessary to construct any ditch deeper than 2½ or 3 feet below the grade of the road. It is sometimes necessary to do so to get a suitable grade to drain the system.

LAYING SUBDRAINS AT SIDE OF ROAD, MONTGOMERY COUNTY, MD.

Summary

In summarizing: No distinct advantage can be claimed for the tile drain above the open ditch; nor can it be said that the open ditch is more favorable at all times than the tile drain. But there are certain conditions where a combination of the two will be the most practical. If an open ditch is used, there is no advantage in making it any deeper than to intercept water, and it should not be so deep that it cannot be maintained by machine; otherwise the maintenance will be a costly item. An open ditch can be used to intercept water as effectively as a tile drain. The open ditch must be constantly maintained, and it presents a hazard to traffic. On the other hand, a tile drain will serve as well as an open ditch when used to prevent water from getting under the roadway. The maintenance of a tile drain is generally less than that of the open ditch, although often its original cost of construction is greater. At no time does the tile drain present any hazard to traffic, and for this reason it should be given serious consideration.

Although no decision can be made to the extent of stating that either the open ditch or the tile drain is preferable, it can safely be said that there are conditions when it is more economic and desirable to use either one or the other. After a careful consideration of all the details, it seems quite likely that a combination of the open ditch and the tile underdrain is more suitable than either the one or the other.

In no case is it necessary to construct the open ditches or tile drains lower than that point which will intercept water, for in practically no instance do the drains reduce the amount of capillarity, and, after all, a combination which will most economically reduce the amount of moisture in the subgrade is the method to be selected, taking into consideration the first cost and cost of maintenance, and giving due consideration to any hazards which might be interposed on account of the open ditch.

Acknowledgment.—From a paper read at the Eighth Annual Conference on Highway Engineering at the University of Michigan.

Health officers should establish cordial relations with every agency in the community working for the public good—especially the newspapers. The best-informed people are always with the health officer in spirit. It must therefore be his care to let them know what he is trying to do, that they may be given an opportunity to aid in the good work.

How Pittsburgh's Graded Tax Law Is Working

By J. Ralph Park

Executive Secretary, Allied Boards of Trade, Allegheny County, Pa.

A DEMONSTRATION of the effect of shifting the tax burden from houses, which are a product of industry, to land values, which are created by the community, is being carried on in Pittsburgh under what is locally called the "Graded Tax Law," which applies to second-class cities in Pennsylvania. This law provides for the lowering of municipal taxes on all improvements on real estate at the rate of 10 per cent every three years until the rate on buildings is one-half the rate on land. At the present time buildings in Pittsburgh are assessed 60 per cent of the amount assessed on land, and the next reduction of 10 per cent will be made in 1925.

This system of taxation exists as the result of an effort to correct the old plan of assessing large tracts of land held out of use for speculation as "agricultural" and charged one-half the tax rate, and "houses surrounded by trees and shrubbery" as "rural" at one-third the tax rate, which was abolished in 1911. The campaign of education which was carried on among the civic bodies for several years prior to the abolishment of the old system created so much interest in taxation that at the next session of the Pennsylvania Legislature in 1913 the "graded tax law" was secured. Mayor William A. Magee, who was then in office, and who was reelected in 1921, favored this legislation and was largely responsible for its passage.

At the time of its passage, the graded tax law was very much needed; for, owing to wild speculation in land values fifteen and twenty years ago, the prices had been boosted beyond reason, new plants were prevented from locating in the city, home building was handicapped, and rents were increased. It was thought that the new law would stimulate building and tend to prevent further inflation in land values, all of which has been borne out by experience.

Since the war most cities have had considerable land-value inflation, while in Pittsburgh the prices of land have had a tendency to remain stationary, so that such prices in competitive cities are now equal to, or higher than, those in Pittsburgh. This will insure to Pittsburgh a greater growth during the present decade than during the past decade, when it was handicapped by prohibitive prices asked for land. Large landed estates which have been held out of the market for several generations, with a fixed "no sale" policy, are now beginning to sell at reasonable prices.

The beneficial effects of the Graded Tax Law are most clearly demonstrated by the increase in the number of houses built since this law went into effect. In fact, the city is now in the midst of the greatest building boom in its history, encouraged largely by the fact that, beginning this year, improvements on real estate will be taxed only 60 per cent of their value.

These results have been secured without any disturbance of the ordinary real estate market. The total assessed value of land is about double the total assessed value of improvements, the reduction of 40 per cent on buildings having meant an increase on land of only 20 per cent. In fact, so gradually has this shifting of the tax burden been accomplished that many of the average taxpayers have been unconscious of it. However, when an attempt to repeal the law was made at the last session of the Legislature by some of the politicians representing the "big interests" in vacant land, there was a unanimous movement among the various civic bodies, labor unions, etc., including the Chamber of Commerce, which had originally opposed the law, vigorously protesting against the repeal, and the bill was never brought out of committee.

High prices for land handicap both labor and capital, and it is believed that Pittsburgh has demonstrated in a practical way the advisability of removing taxation from the personally created values of industry and placing it where in all equity it belongs—on the community-created values of land.

Forward Steps in Municipal Affairs

Mayors

A Municipal Golf Course the Gift of a Bishop

Salt Lake City, Utah.—The beautiful golf course recently presented to Salt Lake City by Bishop Charles W. Nibley consists of a rolling tract of land 56 acres in extent. This course is within the corporate limits of Salt Lake City and is only about a ten-minute drive from the heart of the business district, over a paved street. A splendid street-car service takes one to the club house door.

This tract of land has a unique and interesting history. Soon after the arrival of the Mormon pioneers in Salt Lake Valley in 1847, David Calder located on this land, and successfully farmed it for a number of years. Near the south line is a beautiful natural lake of about five acres in extent, surrounded by native shrubs and trees. Mr. Calder was quick to grasp the wonderful possibilities here presented for a natural park, and proceeded to capitalize the idea. A successful pleasure resort was operated here for a number of years and was known as Calder's Park.

Later on, a number of prominent business men of the city formed a corporation and purchased this property. The name was changed to "Wandermere." The natural beauty of the place was enhanced by scientific landscape gardening, and modern amusement park equipment was installed. A few years ago the Latter Day Saints Church acquired title to this property and laid out the present beautiful golf course.

The City Commission had for some time been besieged with requests from different civic and business organizations for a municipal golf course. During this time Bishop Nibley, who is a keen lover of the game of golf, had acquired by purchase from the church the title to the beautiful Wandermere Park golf course, with the thought in mind of presenting it to the city.

On Christmas Eve of 1921, Bishop Nibley called the Mayor to his office and handed him the deeds conveying to Salt Lake City this splendid property, and expressed the happy thought that this would

THE SNOW-CLAD MOUNTAINS OF THE WASATCH RANGE MAKE A FINE BACKGROUND FOR SALT LAKE CITY'S NEW MUNICIPAL GOLF COURSE be his Christmas present to his fellow citizens.

The necessary legal details attended to, including a resolution passed by the City Commission accepting the munificent gift and designating the plot of ground as "Nibley Park," the formal presentation exercises were held at the park Saturday, May 20, 1922.

An appropriate program was carried out. One of the interesting numbers was an exhibition game of golf between Gix Von Elm, Western amateur champion, and Miss Florence Halloran, Utah and Southern California champion, both of whom are from Salt Lake.

Bishop Nibley, in formally presenting Nibley Park to the citizens of Salt Lake City, spoke as follows:

"It has given me great pleasure to present this tract of ground, now known as Nibley Park, to our beloved city of Salt Lake.

"Truly, it is more blessed to give than to receive; especially if the gift is from the heart and is intended to be of service and benefit to others. Any genuine soul with a spark of God's nobility in him may find the truest happiness in lovingly and loyally giving.

"The praises of men, like their censures, are altogether fleeting and transitory. There can be little in all that to satisfy and encourage good deeds. But when I think that this generation, and generations of men and women yet to come, shall find health and enjoyment and rare pleasure here in playing that splendid outdoor Scotch game known as golf, and also in other outdoor amusements which shall not interfere with golf, that thought gives me the highest satisfaction and most genuine pleasure.

"And in this thought, Mr. Mayor, and in this spirit, I most cheerfully make formal presentation of Nibley Park to Salt Lake City."

In accepting the park, the Mayor declared that there had been too few of such gifts in the past, and he urged that others, like the honored guest, be moved to confer on the city in the future such monuments as did Bishop Nibley in giving Nibley Park to the City.

C. C. NESLEN,
Mayor.

Park Departments

Does the Public Attend the Great Free Park Concert?

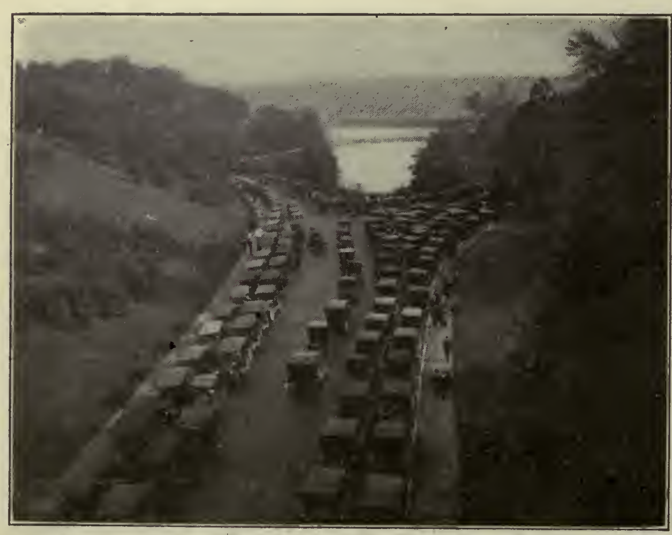
Cincinnati, Ohio.—Every so often the question is raised by city fathers, who seek to increase the usefulness of the public parks in their care, "Do carefully-planned programs for Saturday or Sunday afternoon concerts really pay, in the sense of attracting really good-sized crowds?"

Cincinnati, which has long been a notable music center, is prepared to answer the question most heartily in the affirmative.

In Cincinnati public-spirited citizens have raised sufficient funds to provide for Sunday afternoon park concerts in two of the largest suburban parks.

In each of these parks, weather permitting, fifteen concerts are given between the first of June and late fall. An orchestra of thirty-five men provides the backbone of the program. The soloists who take part very frequently donate their services, or make a nominal charge. As a result, the Board of Park Commissioners finds that $190 covers the entire cost of holding a concert, even to the thousands of leaflet programs distributed by Boy Scouts and police to the crowds.

Such count as is possible with affairs of the



SOME OF THE THOUSAND AUTOS PARKED AT EDEN PARK, CINCINNATI, DURING A CONCERT

A SIGNBOARD THAT MADE PEOPLE THINK
The Kansas City Park Board's answer to the offending grocery store

sort has been made on many occasions, and it is found that never less than fifteen, and more often twenty, thousand persons attend the average concerts. Special programs announced in the press the day before often bring twenty-five thousand persons to a park to hear the music.

To-day the automobile is employed by the concert-goer. The photograph shows some of the long lines of cars parked in Eden Park during a concert. Police statistics show that seldom less than a thousand cars are parked.

These facts, along with innumerable others in possession of the Park Commissioners, have convinced the Park Department that any investment of recreation funds in popular outdoor public concerts is certain to meet with the most widespread approval, and is, therefore, an investment which most certainly pays.

C. H. MEEDS,
Engineer and Executive Officer, Board of Park Commissioners.

"Park and Plan Week" Arouses Much Interest

Kansas City, Mo.—The Park Board's program for future development received added impetus in a recent four-day celebration of the thirtieth anniversary of the park and boulevard system of Kansas City. The observances included a tribute to the city's pioneer builders; a floral parade; band concerts, community sings and short addresses; a children's pageant, showing the development of the city's beauty-spots; and a big, all-day "town picnic."

The whole purpose of the celebration was expressed in the slogan, "Recall the Past and Vision the Future." The program was designed to celebrate past achievements and impress their extent and value upon residents of the city, and to bid for a reawakening of public spirit in park improvement. Credit for Kansas City's park and boulevard system, now acknowledged one of the best in the country, belongs largely to a few men of vision and generosity, who gave large tracts of land and fostered ordinances restricting certain districts and providing for the building and maintenance of parks and drives. It was partly to keep their work fresh in the minds of the present generation that "Park and Plan Week" was observed.

The extent to which the Kansas City Park Board is ready to go to protect its parks and boulevards was demonstrated on the day of the parade.

A grocery firm had erected, over the protest of the Park Board and property owners in the block, a one-story store building on Benton Boulevard, one of the city's most beautiful residence streets. Efforts were made to stop the project, for the stores were built on a level and flush with the sidewalk, breaking a vista made by a low, rolling terrace and fine residences well back from the street. But the owners of the structure went ahead, finished their building and occupied one room as a grocery, renting the other for a drug store.

A few hours before the floral parade, when thousands passed the place, the Park Board caused a neat white signboard, lettered in black, to be erected on Park Board property, alongside the building. One side of the board bore this message:

> All persons who favor putting stores in residence districts, such as this, should patronize these two little stores. Those who hold the contrary opinion will not.

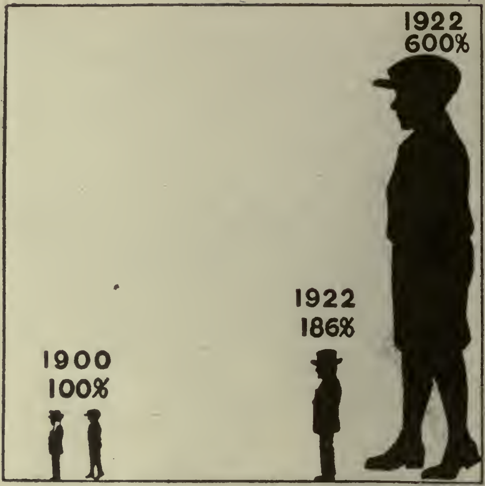
The other side of the board carried a brief outline of the fight to bar the stores and a statement that they were erected against the wishes of property owners in the block.

W. C. SCARRITT,
President, Park Board.

Departments of Education

Duluth Votes Half-Million for Schools

Duluth, Minn.—On July 15 the voters of Duluth went on record for a liberal educational program. As a result, there will soon be issued $500,000 of bonds which will bear interest at 4¾ per cent and will mature serially in 10 years. In the local advertisement announcing the bonds, it was stated that the proceeds were to be used "for acquiring school sites or making such alterations and repairs as are at present necessary." The intention of the School Board is to use some of the money to cover immediate necessary repairs; to refund the amount so used when tax levy receipts are received; and eventually to use the entire sum of one-half million dollars for the acquiring of suitable sites for schools.



CARTOON SHOWING RELATIVE GROWTH OF POPULATION AND OF SCHOOLS, USED IN DULUTH'S BOND ISSUE CAMPAIGN

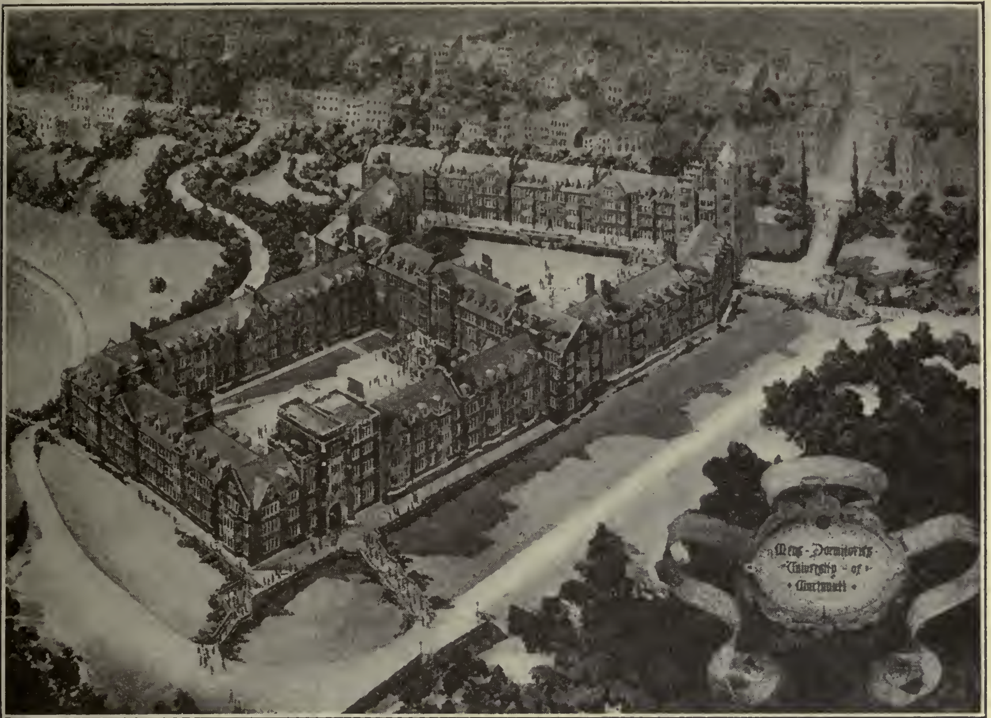
The vote on the bond issue was 3,738 for, and 1,202 against. This is considerably more than the two-thirds majority of all the votes cast necessary to carry the issue. The total vote was only 4,940, although the last municipal registration showed 22,000 voters.

The School Board elections are held independently of the city government. In Duluth the City Council has no control over the school system nor anything to do with it. A non-salaried Board, elected at large, controls school activities, and this Board makes its own levy and conducts its own elections.

S. M. CHAMBERS,
Taxpayers' League of St. Louis County.

Cincinnati's Municipal University to Have Big Dormitory

Cincinnati, Ohio.—One of the most complete dormitories in the United States has been planned for the University of Cincinnati, one of the few municipally owned colleges in the United States. When it is finished, the dormitory will house about 1,100 students. The project will be carried out in units, the first of which is being built at the present time, in the southern end of the campus, just across the roadway from the present gymnasium, which stands above Carson Field, the athletic grounds of the University. The complete dormitory will stretch from a point opposite the gymnasium to Calhoun Street, which is more than a city block distant.



ARCHITECT'S DRAWING OF THE MEN'S DORMITORY FOR THE UNIVERSITY OF CINCINNATI

This first wing will house about 250 students. It will not be ready for the first semester this year, so students will continue to board at fraternity houses or in private residences and the Y. M. C. A. Alumni of the University of Cincinnati feel that college spirit, hitherto lacking at the University, will be fostered through the erection of the dormitory, which will cause students living in the place to eat, sleep and "fight" for the institution. The development of good athletic teams at the college has been going forward, and now it needs but a dormitory to make Cincinnati a factor among the big colleges of the country.

The project, as a whole, will cost about two million dollars, and this means necessarily slow, if sure, progress toward the completion. The wing now being built is shown at the extreme left of the reproduction. The middle wing will be in the form of a memorial to former students of the institution who served in the World War. The dormitory was planned by Harry Hake, architect, and Charles H. Kuck, associate.

ALLISON F. STANLEY,
Director of Public Relations, University of Cincinnati.

City Planning Commissions

Hillside Streets Require Special Treatment in City Planning

Pittsburgh, Pa.—Many younger and smaller cities can learn a useful lesson from the difficulties encountered by the Citizens Committee on City Plan of Pittsburgh in connection with the proposed widening of some of Pittsburgh's hillside streets. At best, street widening is a difficult and expensive process, but the undertaking may become almost impossible on a hillside where lack of forethought has allowed the streets to be narrow, and an intensive development to grow up on them.

In the Citizens Committee report suggesting a major street plan for Pittsburgh there are shown, among others, the two illustrations here reproduced, and a special topographic map. The latter was prepared to show the topography as if it were modeled, and the lines of the proposed main

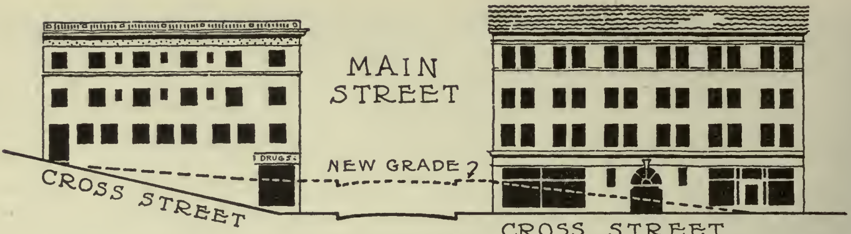


FIGURE-1- SHOWING BY DOTTED LINE HOW CHANGE OF ELEVATION OF MAIN STREET AFFECTS GRADE OF INTERSECTING STREET

ONE OF THE EFFECTIVE ILLUSTRATIONS IN THE PITTSBURGH COMMITTEE'S REPORT

thoroughfare plan were placed thereon. The map indicates clearly the general conformation of the hills and valleys, even though the scale of the drawing is too small to show lesser differences in elevation which are yet obstacles to the development of streets. Only such a map will make clear the reason for the winding and circuitous character of many of the principal thoroughfares. The difficulties are more fully realized when it is noted that many of the minor streets have grades as steep as 15 per cent, while some are up to as much as 20 per cent. Within the city the variation in elevation is as great as 500 feet.

To change the grade of a thoroughfare frequently entails changing grades of intersecting streets; and the widening of a thoroughfare, especially if it lies along a hillside or if the cross-streets are not level, affects the cross-streets in a similar manner. It will be seen at once that under any such conditions the cost is much greater than would be the case if only the main thoroughfare itself were affected. This characteristic, peculiar to such topography as Pittsburgh's, makes such improvements cost much more than in other cities which have more favorable topography. These physical and financial difficulties are important causes of the city's failure to develop heretofore a more complete and adequate main thoroughfare system.

FREDERICK BIGGER,
Architect and Town Planner, Citizens Committee on City Plan of Pittsburgh.

Public Works Departments

Omaha's Municipal Coal Yard

Omaha, Nebr.—When retail prices of coal in Omaha began to soar, in the first autumn of the war, City Commissioner Daniel B. Butler began to look around for a remedy. In the city charter he found a paragraph which gave the city the power to sell coal to its inhabitants, provided it charged only the cost of the coal plus the cost of handling it.

When he offered a resolution in City Council to open a municipal coal yard, he met tremendous opposition. Other council-

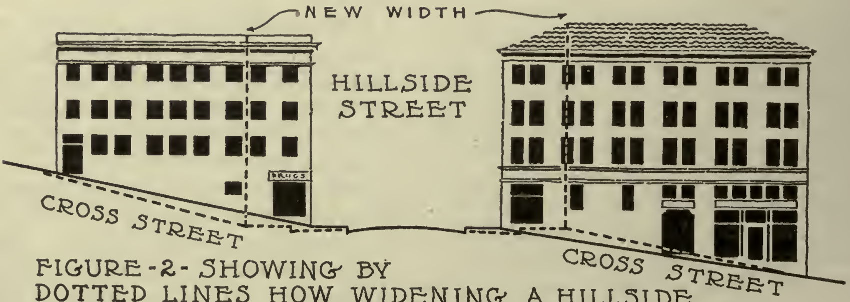


FIGURE-2- SHOWING BY DOTTED LINES HOW WIDENING A HILLSIDE STREET CHANGES GRADES OF CROSS STREETS

ANOTHER ILLUSTRATION FROM "A MAJOR STREET PLAN FOR PITTSBURGH" men opposed it as a radical departure from precedent. However, the municipal coal yard was opened that fall, handling a line of coal from Montgomery County, Ill., and selling it at $4 to $5 less than was being charged by the coal dealers. A little less than 5,000 tons was sold and delivered by the municipal coal yard that winter.

The following year more than 8,000 tons was sold, most of the coal coming from one large mine in Colorado. Sales during the winter of 1919-20 totaled 6,564 tons, at prices ranging from $9 to $7.50. In 1920-21 they reached 12,819 tons. Last winter was a mild one, and sales were 10,052 tons. The price was $10.50 and $10 delivered, or $1 a ton less if the purchaser hauled it.

The total cost of last winter's coal handled by the municipal yard was divided as follows: cost of coal at the mines, $32,766; freight, $52,608; printing, $200; wages, $2,020; salaries, $915; hauling, $14,916; miscellaneous, $181; advertising, $88; and telephone and telegraph, $86. Total, $103,780. Receipts for coal were $103,837.

The amount received for the coal was just $57 more than the cost. The yard costs the city not a penny. Everything in connection with the cost of the coal, from hauling to clerical work, even telephone service, is charged to the consumer. But no profit is made.

MONTAGU A. TANCOCK,
Publicity Manager, Omaha Chamber of Commerce.

Fire Departments

San Francisco Provides Home for Fire Chief

San Francisco, Calif.—This city has recently provided a building to be used by present and future fire chiefs as their residence. The house, which was built by the city at a cost of approximately $25,000, provides on the first floor a garage for the fire chief's private automobile and for the official car in which he drives to all fires. The doors to that part of the garage for the official car are opened automatically. At the left of this section there is a room which is equipped with beds for the drivers of the chief's cars. The window of this room opening on the street can be seen in the accompanying illustration.

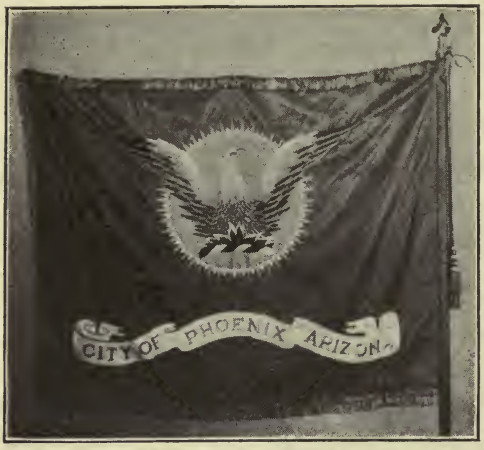
On the second floor are the chief's bedroom, parlor, dining-room, kitchen, and small breakfast room, and on the third floor there are three bedrooms and a sewing room. In addition, there are suitable baths on all three floors and an office for the chief on the ground floor.

Immediately in front of the house is a flagpole surmounted by an electric light with a red globe. A tablet between the two garage doors has a bronze memorial erected to the memory of Dennis T. Sullivan, one of San Francisco's best known fire chiefs, who was killed on duty during the fire of 1906.

So far as is known, San Francisco is the first city to provide a permanent home for its fire chief. The reasons for having an official residence are of course stronger in the case of the fire chief than they are in that of any other official, for in no other case is speed in getting to the point of danger so vital.

J. S. DUNNIGAN,
Clerk of the Board of Supervisors.

SAN FRANCISCO'S FIRE CHIEF NOW HAS A HOME PROVIDED BY THE MUNICIPALITY



NEW OFFICIAL FLAG, PHOENIX, ARIZ.

City Clerks

Phoenix Adopts an Official Flag

Phoenix, Ariz.—As a result of an ordinance recently adopted, the city of Phœnix now has an official flag, the design of which is shown in the accompanying illustration. The official description is as follows:

> "Phœnix bird in grey on gold sunburst background on a blue ground. White ribbon scroll along lower part of flag, on which is the following legend in gold: 'City of Phœnix, Arizona.'"

Much interest has been shown in the new flag, and it is expected that it will be flown on all public occasions.

GEORGE KIRKLAND,
City Clerk, Phoenix, Ariz.

Public Safety Departments

"Don't Kill a Child"

Oak Park, Ill.—For several months the Safety Commission of Oak Park has been carrying on a program to promote interest in public safety measures, and particularly those relating to protection of children.

A SIGN AT OAK PARK, ILL., THAT COMPELS ATTENTION

Fifty signs similar to the one in the photograph have been installed at various locations in the village. The signs have been the subject of a great deal of comment, some favorable and some not, and have served the purpose of arousing interest in the matter of public safety. Creating interest in public safety necessarily precedes safe conduct in public places.

DUDLEY C. MEYERS,
Assistant Secretary, Safety Commission.

ANOTHER WAY OF WARNING MOTORISTS TO WATCH OUT FOR CHILDREN

The World's Largest Municipal Distributor of Electricity

A Statement Furnished to THE AMERICAN CITY by the Department of Public Service, Los Angeles

THE city of Los Angeles recently established itself as the largest municipal distributor of electricity in the world when it consummated the purchase of the distributing system, within that city, of the Southern California Edison Company, a large private power corporation.

With a highly successful hydroelectric power generating and distributing system already in operation, Los Angeles increased its municipal electric system tremendously by the purchase of these lines for a consideration of approximately $12,000,000. The consummation of this notable transaction, marking as it does the steady development of municipal ownership of public utilities in Los Angeles, came at the end of a three-year fight on the part of the city to take over the Edison Company's properties. As far back as June, 1919, the people of Los Angeles by an overwhelming vote authorized the issuance of $13,500,000 in bonds to be used, in the main, to purchase the electric distributing system of the large private corporation. Interests unfriendly to the wishes of the people in this direction immediately instituted litigation against the bonds and succeeded in holding them in the courts until the spring of this year.

Prior to taking over the distributing system of the Southern California Edison Company, the city of Los Angeles had in operation an electric system under the direction of its municipal Bureau of Power and Light, which in June of this year was serving about 20,000 consumers. In taking over the lines of the private power company, the city added 120,000 consumers to its system, so that it is now serving 140,000 consumers in Los Angeles with light and power. Immediately upon acquiring the lines of the Edison Company, the Los Angeles Bureau of Power and Light reduced the rates of the 120,000 new consumers, on the average of 12 per cent, in order to make the rates of these consumers conform to existing municipal rates. This rate reduction effected in one sweep a saving to these 120,000 consumers of more than $600,000 annually.

Added significance is given to the reduction of rates to its new consumers when it is noted that provision has been made by the city whereby the interest and annual repayments on outstanding power bonds are borne entirely from revenues derived from the sale of light and power. With an investment of more than $25,000,000 in its electric generating and distributing system, the city during this fiscal year, beginning July 1, will meet from power revenues interest and principal repayments on electric plant bonds amounting to about $1,800,000.

This means that the ownership and operation of a large and growing electric generating and distributing system by the city is not now costing its people one cent in additional taxes. It may well be understood why the people are enthusiastically in favor of their municipal light and power system when it is explained that electric rates in Los Angeles are from 30 to 40 per cent lower than those generally charged elsewhere in California. Low municipal rates, it is commonly conceded, have not only made possible the rapid industrial development of Los Angeles but have also forced competing private power companies to lower their rates within the limits of the city. With the taking over by the city government of the Southern California Edison Company distributing system in Los Angeles, only one other private power company now remains in that field. It has been authoritatively stated that preliminary negotiations have already been set under way looking toward the taking over of this system by the municipal plant. At the present time, the municipal Bureau of Power and Light serves more than two-thirds of the consumers in Los Angeles.

The existing hydroelectric generating system of Los Angeles at the present time has all its plants along the line of the famous Los Angeles aqueduct, which stretches over mountains, valleys and deserts for a distance of 250 miles and delivers water from the high Sierras to the people of the Southern California metropolis. Extensive plans are now under way for the development of large quantities of additional hydroelectric power by the city. These plans are being perfected by Chief Engineer William Mulholland of the Public Service Commission and Chief Electrical Engineer E. F. Scattergood of the Bureau of Power and Light. Los Angeles is deeply interested in the construction of a huge dam, under the direction of the Federal Government, at Boulder Canyon on the Colorado River. A dam at this point, constructed along the lines suggested by Director Arthur P. Davis of the United States Reclamation Service, would develop 600,000 continuous horse-power of electric energy. Los Angeles has officially expressed itself as desiring to share with other municipalities and districts of the Southwest in the development and use of this tremendous hydroelectric power.

The largest municipal hydroelectric plant of Los Angeles is shown on the front cover of this issue.

Dangerous "Amusement Devices"

JUST about thirty years ago the Chicago World's Fair gave birth to the mechanical "amusement device," which since then has come to infest every private park in the country and some public parks. During that time a record of accidents and fatalities has been piled up against these machines which characterizes them as not merely a public nuisance but a public menace. Last week [in June, 1922] a degenerate descendant of the Chicago Fair family, a small Ferris wheel, blew down in a wind storm, adding seven or eight more to the list of victims of amusement devices.

It is time to put an end to this bad record. Two courses are open. If the thrill-making machines built for the alleged diversion of the working man and his family are held to satisfy a real need, they must be placed under such control, and charged with such accountability, as will assure safety. To do this, competent engineering certification of their adequacy in construction and in operation is the minimum requirement. This is the one course; could it be followed effectively and continuously, a reasonable assurance of safety might be attained. The other course is more radical but certain in its operation: wipe out the amusement devices entirely.

Under present conditions the public safety is constantly at risk while the various contraptions intended to give their patrons a new sensation continue to exist. Depending for their attraction on a spice of fictitious danger, they are so built and managed that this danger only too often becomes real. With the rarest exceptions they are incompetently designed, cheaply built, and operated by roustabout attendants. Only through a miracle can they be permanently safe; and sad experience shows that this particular miracle does not often happen. Both structural safety and operating safety are in question. Frequent competent engineering certification of the structures would reasonably assure the former. Safe operation is a more difficult problem, and nothing less than requiring skilled, licensed operators to be in charge of such devices at all times would do.

We have little faith that such drastic requirements could be enforced even in cities with efficient administrative machinery. And of course those amusement machines which are located outside of cities, as many of them are, would altogether escape control unless it were exercised by the state. Complete abolition of amusement machines is the only dependable guarantee against their dangers.

—*Engineering News-Record.*

Facts of Public Administration

Without facts, without a scientific record of experience, public administration cannot advance beyond its present primitive level. And we cannot have the necessary knowledge unless the facts of public administration are recorded in standardized form, and garnered into the granaries of knowledge and correlated and interpreted through disinterested research.

—Luther Gulick.

Moberly, Missouri, Enlarges Water-Supply

Chamber of Commerce Active in Securing Bond Issue and in Organizing Holding Company to Finance Part of Cost

By Gordon Hudelson

Moberly, Mo.

THREE hundred acres of swamp land, untillable and practically worthless, turned into a reservoir containing water enough to supply a city of 100,000 people, is the project which has just been completed at Moberly, Mo., by the firm of Fuller & Beard, engineers, of St. Louis, Mo. This system, representing an investment of $344,219.53, has been finally accepted by the city and the Wabash Railroad.

Prior to the construction of this new water-works system, Moberly, a city of 13,000 people, had been hampered because of lack of water. The Wabash Railroad, which has its shops here, threatened to move the shops unless ample water could be supplied them. Only at certain hours in the day could water be used, and property owners were not allowed to water their lawns.

In view of all these facts, the Chamber of Commerce and the City Council started to work, and in January, 1920, A. H. Beard of the firm of Fuller & Beard was asked to come to Moberly and furnish a plan, report and estimate. This was done, and the plan was adopted in May, 1920. The original cost was approximately $351,000, and it was decided that a holding company or holding trust should be organized to finance half of the proposition by issuing bonds to be paid for by a lease arrangement out of the revenue from the plant. In turn, the city authorized a bond issue to cover the other half of the cost of the plant, and in August, 1920, a city election was held for the $175,000 bond issue and it carried by a ratio of 97 to 1. This made available $350,000 for

DAM, SPILLWAY AND PUMP-HOUSE AT SUGAR CREEK LAKE the new water-supply, half having been subscribed under the Moberly Utilities Trust, an express trust.

Forty bids were received on March 10, 1921. The contract was awarded to the Lynch-McDonald Construction Company of Moberly, covering the entire improvement, mostly for a flat sum price, which was $222,861.50. This included the entire project, excepting the land and the right of way necessary for the construction of the dam and creating a lake and laying of the pipe line and transmission line from the lake to the city.

Three hundred acres of land lying five miles northwest of the city was purchased by the city. This included about 175 acres of swamp land. Here a large reservoir was built, with a capacity of 350,000,000 gallons, the average depth being 10 feet and the greatest depth 22 feet. At Forest Park Lake, where the city had been receiving its water-supply, was a natural reservoir with a capacity of 150,000,000 gallons. This, combined with the new lake, makes a total of approximately 500,000,000 gallons available for the water-supply of the city.

The drainage area of the new Sugar Creek reservoir is more than 12 square miles. Rains which fell after the dam and spillway was constructed filled the reservoir, and during a slight drought which resulted in July the lake receded only 4 inches from the top of the spillway, practically assuring a continuous supply.

Construction of the Dam

The total length of the dam is approximately 1,100 feet. The reinforced concrete spillway measures 150 by 6 feet, giving a capacity of more than 3,000,000 gallons per day of 24 hours. The dam is so designed that it could be raised an additional 15 feet and create a lake of much larger area and approximately triple its present capacity. The total height of the dam above the bed of the creek is 28 feet, and the height of the spillway is 22 feet. Nearly 2,700 cubic yards of concrete was used in the construction of the dam and spillway, and it required 51,000 cubic yards of earth fill to construct the dam.

The approximate width of the dam at the base is 150 feet, and at the top, 47 feet. The entire upper slope of the dam is riprapped with 3,150 yards of rubble limestone. The core wall is 15 inches in thickness. The total cost of the dam was $107,500.

Slightly over 18,000 square feet of interlocking steel sheet piling was driven to a solid foundation below the surface and continued to the top of the dam with reinforced concrete core wall, which is intended to prevent any leakage that might be caused by passages of muskrats or crawfish.

The Pipe Line

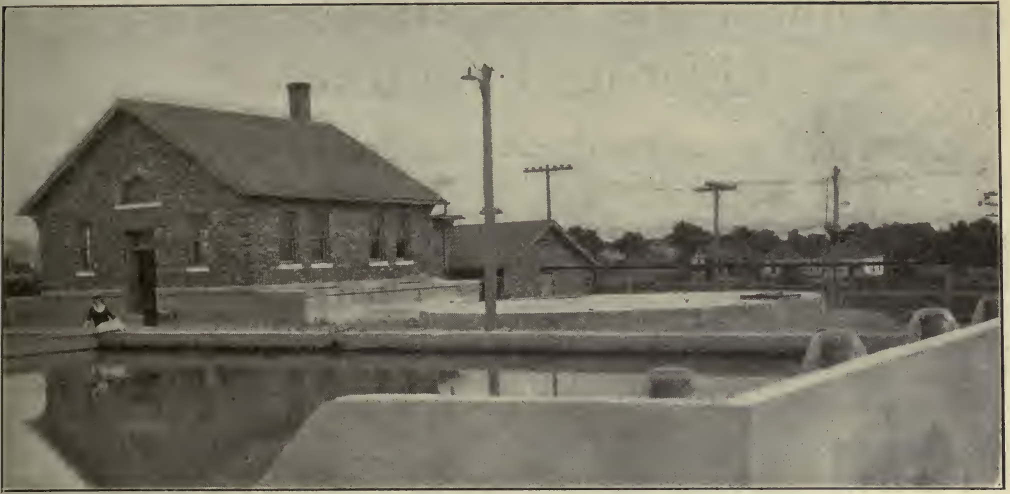
The length of the electric transmission line from both reservoirs to the filter-plant is 5 miles. There are 3¼ miles of 14-inch wire-wound and coated wood stave pipe from a point 900 feet south of the Sugar Creek pump to the filter-plant. A 10-inch wood pipe line from the Forest Park reservoir to the filter-plant, which is located at the city limits, is 1⅓ miles long. A 14-inch cast iron water-main was laid from the pumping-station to the filter-plant and connected a large main on Reed Street, a distance of 1½ miles.

Pumping Equipment

The surface of Sugar Creek Lake, when level with the spillway, is 145 feet below the average surface of the city of Moberly. The surface at Forest Park Lake is 65 feet below the surface of Moberly.

At the filter-plant and pumping-station, which cost $12,900, is installed a 150,000-gallon steel water-tower, which is 26 feet high. The pumping-station consists of one pump at Forest Park Lake, driven by an automatic-controlled electric motor, and has a capacity of 1,000,000 gallons per day. The pumping-station at Sugar Creek, where the new reservoir is located, has two automatically operated electric motor-driven centrifugal pumps, one with a capacity of more than 600,000 gallons per day, and the other of 1,000,000 gallons per day. These pumps are for the purpose of pumping the water to the filtration plant.

There are installed at the main pumping-station at the filter-plant two high-duty domestic pumps, each with a capacity of 1,000,000 gallons per day, and one wash-water pump for furnishing wash water to the filters, with a capacity of 3,000,000 gallons per day, and one low-service pump for supplying lake water to the Wabash Railroad, with a capacity of 1,000,000 gallons



AERATOR, SETTLING-BASINS AND FILTERS, MOBERLY, MO.

per day. The pumping equipment cost approximately $7,579. A Venturi meter is used to measure water to large consumers, and also graphic recording pressure gages.

The Filter-Plant

The filter-plant and settling-basins, which represent an investment of $48,000, are constructed of reinforced concrete. The capacity of the rapid sand filter-plant is normally 2,000,000 gallons per day, with a maximum of 2,500,000 gallons per day. There are four filter-beds and two settling-basins and two clear-water storage reservoirs with a capacity of 300,000 gallons. The raw water passes through chemical mixing tanks, where it is treated with alum and lime, and then passes through aerators and settling-basins, thus eliminating all odors, and mixes the chemicals with the water prior to sedimentation. The water then passes through 4 feet of white sand, gravel and rate controllers, which regulates the flow of water to the clear-water basins below and thence into the city mains, and it is chlorinated at the end of the suction pipes of the city pumps.

There were four buildings erected in connection with this project, at a cost of $15,344: one chemical storage and feed house; one filter building, and two pump-stations, all of which were constructed of brick. The duplicate transmission line from the light plant to the main pumping-station was run on separate poles and cost $10,154.60.

This water-supply is expected to benefit the city greatly, and many factories and industries have been considering locating branch factories here since the completion of the new water-works project.

Much credit is given the Moberly Chamber of Commerce for the building of this water-works system, as it was through the efforts of that organization that the bonds were sold and the money procured for the undertaking.

Building the City for the Future

Make no little plans; they have no magic to stir men's blood and probably themselves will not be recognized. Make big plans; aim high in hope and work, remembering that a noble, logical diagram once recorded will never die, but long after we are gone will be a living thing, asserting itself with ever-growing insistency. Remember that our sons and grandsons are going to do things that would stagger us. Let your watchword be order and your beacon beauty.

—DANIEL H. BURNHAM.

Minneapolis Investigates Street Lighting Conditions

Committee of City Council Made Trip to Inspect Different Types of Lighting Systems

IN response to a considerable agitation on the part of different civic organizations in Minneapolis for a better and more economical system of street lighting, a Committee on Public Lighting was appointed by the City Council to visit other cities and investigate and report on the various types of street lighting systems, the amount of illumination and the cost of street lighting in these cities. The investigation included the cities of Milwaukee, Chicago, Detroit and Cleveland, as well as a visit to Nela Park, the Illuminating Engineering Laboratory of the National Electric Light Association, devoted exclusively to illumination laboratory work and the testing of lighting units. During the investigation, hundreds of illumination tests were made and data of every sort bearing on street lighting were gathered, with the result that the Committee made an interesting report with specific comparisons of the various systems.

The Milwaukee Lighting System

Milwaukee was the first city visited by the Committee. Previous to 1916, Milwaukee was probably one of the poorest-lighted cities of its class in the country. The lighting system then consisted of 271 gasoline lamps of 60 candle-power per unit, 3,157 gas lights of 60 candle-power each, 1,294 enclosed-arc lamps of 250 candle-power, 935 open-arc lamps of 400 candle-power, and 89 luminous arcs of 600 candle-power. In the outlying districts the lighting was very meager, many streets being entirely without lights. In 1916 the construction of a new lighting system of 9,500 lights was begun. The city was divided into districts of five different classes, each requiring a different intensity of illumination. The standard of average illumination set for each class was as follows: outskirts of city, 0.01-foot candles; residential section, 0.03-foot candles; outlying business districts, 0.06-foot candles; main traffic streets, 0.12-foot candles; main business streets, 0.50-foot candles. To reach these standards economically would require a very high-class lighting system, but in so far as the Committee was able to learn from its many tests on the system, there were very few cases where the illumination anywhere nearly approached the standard set, in spite of the fact that light was apparently very extravagantly used in some districts.

The Committee believed that the failure was due to the design of the lamp hood, which allows a very large portion of the light rays to be absorbed in the interior of the hood. Also, the accumulation of dust and small insects that find easy access to the interior of the reflector through the ventilating openings in the hood causes considerable loss of effective illumination. The dust coats not only the outside of the refractor, but also the inside, as well as the surface of the lamp globe, thereby preventing the escape of light from the fixture. In the case of lamps with a mounting height of 22½ feet or 30 feet, there seemed to be a great loss due to atmospheric absorption of the light rays before they reached the pavement. In the case of the so-called harp mounting, used largely in residential districts, the wide shadows cast by the heavy supporting arms which carry the lighting fixture were another considerable cause of loss of light.

The Minneapolis Committee reports that the type of reflector used so distributed the light as to give the street an appearance of even grayness, making it hard to see pedestrians or other objects on the roadway. The silhouette effect was lost almost entirely on account of the absence of brighter areas near the lamps. The system is quite complicated, and much equipment used in its construction is of a special design, making for high first cost, high maintenance cost, and difficulty of getting parts and making repairs, as well as the possibility of more numerous breakdowns than would be probable with standard, well-tried equipment and a simply arranged system.

In the main business district of Milwaukee, the lamps are mounted on 30-foot poles set opposite each other on the curb line. These poles are spaced about 180 feet apart, or six poles per block. Each pole carries two 1,000-candle-power lamps, or 12,000 candle-power per block. In the outlying business districts lamps are mounted on 22½-foot poles set opposite each other on the curb line and spaced 180 feet apart. Each pole carries one or two 600-candle-power lamps, or a total of 3,600 to 7,200 candle-power per block.

In the residential districts lamps are mounted on 15-foot poles with the harp mounting. In some districts these are set opposite each other, and in others are staggered. In either case they are spaced 120 feet apart along the streets. Where the staggered setting is used, a suspension light is generally hung at the street intersections. In the harp light one 250-candle-power lamp is used, and in the suspension light, one 400-candle-power lamp is used.

In traveling over the streets of Milwaukee at night, the Minneapolis Committee states, it was very noticeable that there was no apparent uniformity of lighting, height of mounting, type of fixture, size or number of lamps per pole. It was interesting to note the comparison of the lighting of Mitchell Street, an outlying business street, and that of the Boulevard in Washington Park in Milwaukee. On Mitchell Street, the lamp-posts are 22 feet high, set opposite and spaced 180 feet apart with two 600-candle-power lamps per post, using the standard Milwaukee type hood and refractor. The total candle-power per block is 7,200. Washington Park posts are 15 feet high, set staggering, 120 feet apart along the street, with one 250-candle-power lamp per post, using a globe-shaped refractor which allows the light rays to escape to the sky, as well as to the surroundings. No hood is used on this lamp. The total candle-power power per block is 1,000. The difference in candle-power between Mitchell Street and the Boulevard is over 7 to 1, although the illumination on the street from both sources is the same. This would seem to show an inefficiency in the standard Milwaukee type units and in the high mounting as used on Mitchell Street.

The Chicago Lighting System

In investigating the Chicago lighting system, the Committee found little of interest except that a definite maximum illumination, height of mounting, spacing and type of lighting units was fixed by ordinance. The 600-candle-power type of incandescent lamp is the standard adopted for general illumination. No ornamental lighting is done by the city, but if individuals wish, they are allowed to install and operate at their own expense ornamental lights that comply in all respects with the city ordinance as to the type of standard and fixture, provided the lamps are kept lighted continually. If lights are allowed to remain out for 30 days, they must be removed from the street at the owner's expense. The streets, except in a very few instances, are reported to be poorly lighted. This is due to the high mounting, dusty glassware, low-candle-power lights and wide spacing between lights. One noticeable feature was the absence of overhanging electric signs.

The Detroit Lighting System

The lighting system of Detroit is composed principally of luminous arc lamps and a very few incandescent lamps. Arc lamps are hung 18 feet above the curb from goose-neck standards. On the main business streets each pole carries two lamps. The spacing is 120 feet apart along the street, and lamps are set opposite each other on the curb line. On the more important outlying business streets the same rule is followed, except that only one lamp is hung from a pole. On other outlying business streets, units are staggered. On the business streets of Detroit, the Committee states, the illumination is very much better than on similar streets in any other city visited, except on the main business streets of Cleveland. In the principal residential districts, lamps were hung at the street intersections and at points in the middle of the block, while in outlying districts they were hung at the intersections only. The illumination was good in these districts.

Ornamental arc lights are used on the Grand Boulevard, mounted on 15-foot posts, set 120 feet apart, staggered. The illumination was very good.

The only objectionable features of the Detroit system were the glare when two lamps were mounted per pole with crystal clear glass globe with no provision made for diffusion of the light. The system as a whole is reported to be very economical and the results exceptionally good.

The Cleveland Lighting System

The Cleveland lighting system on downtown streets consists of what is known as the Cleveland post and lantern, a very dignified and beautiful fixture by day and by night. Lanterns are mounted 15 feet above the curb, except in parks, where the mounting height is 18 feet. On main business streets, each lantern has one 1,500-candle-power incandescent light, while on subsidiary business streets, one 1,000-candle-power lamp is used. The lights are set opposite each other on the curb line and spaced about 85 feet apart along the streets. In the parks and on boulevards the same lantern is used, with the same type of post, except that the lantern is hung from a bracket instead of being mounted on top of a post, as on the business streets. One 600-candle-power lamp is used in each park lantern. In residential districts 600-candle-power incandescent lamps are suspended at street intersections, 20 feet above the pavement.

By the proper application of refractors and diffusing glassware in Cleveland remarkable results were apparent. The illumination on the business streets is about the same as on the main business streets of Detroit, the noticeable difference being the absence of glare on the Cleveland streets in spite of the low mounting height and the high candle-power used. This difference is due to the slightly opalescent, rippled glass in the lanterns, which, while eliminating glare, gives a snap and sparkle to the light that is very pleasing to the eye and still allows the light rays to penetrate freely, giving splendid street illumination.

The type of fixture adapts itself not only to good street illumination, but also lights up the front of the buildings sufficiently to give an attractive appearance to the street. The lantern is dust- and bug-proof and, as the rippled glass surface of the glass is on the inside, there is but one smooth glass surface exposed to the dust. The type of refractor used is such that the light is well distributed away from the lamp, yet gives enough illumination thereby to allow a sufficient contrast so that objects on the roadway can be clearly seen against the slightly brighter areas near the lamps.

The Right to See Straight

Of the twenty-four million school children in the United States to-day, approximately ten million are laboring under a grave handicap—defective eyes—which could be mitigated to a great extent, if not corrected entirely, by the intelligent supervision of the state, and of the teachers of the country, through proper eye tests followed by appropriate care.

State laws require that children, within certain age limits, shall attend school for a given number of weeks per year, where they are compelled to carry on a stipulated amount of work. Yet very few states or communities make provision for suitable inspection and proper tests of the pupils' eyes to see that they are fitted to do the work required of them.

In rural communities particularly, very little provision is made for the care of children's eyes or for the proper lighting of the school rooms. In only 23.3 per cent of twelve hundred and sixty-two rural schools reporting from eighteen different states are eyes tested. Statistics from states where school children's eyes have been examined have shown that from 25 to 60 per cent have had defects needing correction. It was learned some years ago by examination that 65 per cent of several thousand school children in Philadelphia had defective vision of such degree as to warrant glasses. When we note that of the one hundred thousand school children of New York City public schools who failed to pass their examinations last year, fifty thousand were found to be suffering from eye defects, we can well understand why some rural communities report that a number of their pupils are "retarded."

In education it is necessary that the eyes not only have an abundance of things to see, but that they see them correctly. Furthermore, accuracy of vision has a vital relationship to conduct. Many a child striving for an education against this handicap of poor vision becomes not only stupid but rebellious, sometimes a truant—and a truant child is a potential criminal.

—Thomas D. Wood, M. D., in *The Survey*.

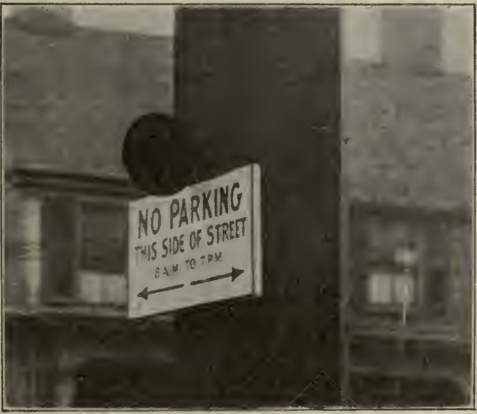
Informing the Autoist Regarding Local Traffic Ordinances

By George A. Carpenter
City Engineer, Pawtucket, R. I.

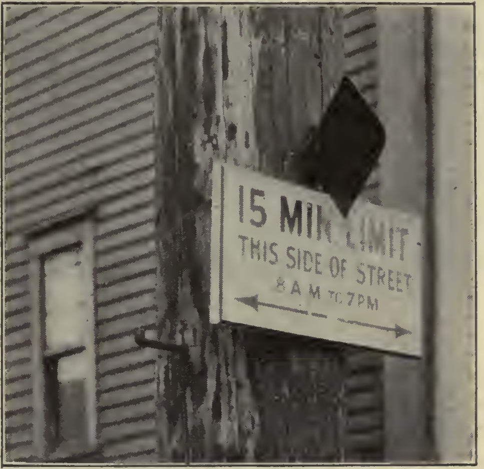
THE rapidly increasing use of automobiles is presenting a very difficult traffic problem to many municipal officials. Not only are the streets congested by a large number of moving automobiles and trucks, but the width of the streets and consequently the area available to traffic are being seriously reduced by the practice of parking automobiles in the highways. In some cities the resurfacing of additional streets with a smooth type of pavement and the designating of "one-way" streets will do much to relieve this congestion, but without further action upon the part of the city the parking evil will still remain.

The Ultimate Solution

It may be considered a step backward to draw comparison with the days of the horse-drawn vehicle, but such a comparison may be suggestive. In those days no person would have thought of making it a practice to drive daily to his place of business and leave his horse and carriage standing all day upon the street that it might be ready to serve his convenience at a moment's notice. Is such a practice any more necessary to-day? What would happen if every owner of an automobile claimed the privilege of riding to his office in his own car and parking it on the highway until ready to use it again? It seems to the writer that the ultimate and only satisfactory solution of this parking problem is to prohibit all parking on streets in business sections and to encourage the construction of commodious, easily accessible garages in the center of the city, where cars can be parked for short or long periods and thus be kept off the streets.



THIS DISK MEANS NO PARKING TO PAWTUCKET DRIVERS



LIMITED PARKING PERMITTED WHERE THIS SIGN APPEARS IN PAWTUCKET

As far as street congestion is concerned, almost any limitation of parking to sixty-, thirty- or even fifteen-minute periods amounts practically to continuous parking, for as soon as one car leaves its parking position another will be found ready to take its place. However, it is customary to suffer these conditions to exist until they become intolerable and then to make regulations correcting and modifying them. This seems to be the way in which the public must be educated, and in the meantime the automobilists must be informed of the purport of existing laws and ordinances.

There is no doubt that a very large

PAWTUCKET'S SIGNS STAND OUT WHERE DRIVERS CAN SEE THEM

majority of automobilists wish to obey the law and intend to do so if only they can know what are the law's demands. One important phase of the traffic problem, therefore, is to inform the autoist, and especially the stranger to the city, just what the local ordinances require. Of course, these ordinances can be printed and copies distributed by the police, but even then the stranger may be at a loss to determine just what he may or may not do in a particular street.

Street signs of some sort, then, are the only, final solution, and the simpler and more nearly uniform these can be made, the greater will be the satisfaction given and the results obtained.

The Proper Place for Traffic Signs

It has long been the writer's contention that traffic signs fastened to poles on the side of the street are difficult to observe and interpret, especially if it is necessary to read the directions thereon. The proper place for the autoist's line of vision, when driving through city traffic, is on the street, directly ahead, and he cannot safely let his line of vision wander over the poles on the side of the street in an effort to locate and read directions. For this reason it seems to the writer that, wherever it is possible to use it, the type of sign adopted by the Massachusetts State Highway Commission, and later used by the Rhode Island State Board of Roads, is the best method of conveying information to automobilists. This sign consists of broad, white marks or symbols painted on the road surface. These are right in the autoist's line of vision and he cannot help seeing them even at night. Then, if states and municipalities will agree on some simple and uniform marks or symbols denoting similar requirements, the problem of imparting necessary information to the autoist will be greatly simplified.

In congested traffic there will be many instances, of course, where information cannot be conveyed in this manner, and some other method must be adopted. Again, it should be emphasized that the main, fundamental requirements are simplicity and uniformity. Suppose, for example, it could be agreed that on all one-way streets all the poles on the right-hand side would be marked with a broad band (three or four feet wide) of some uniform color. If such a system could become general, the tourist in a strange city would know at once, if the poles on his right were banded in that manner, that he was in a one-way street and was headed in the right direction. If he found such a line of banded poles on his left, he would recognize immediately that he was in a one-way street but was headed in the wrong direction. He would not need a traffic officer to tell him of his mistake or to inform him what to do.

Pawtucket's Parking Signs

The same suggestion for simplicity and uniformity holds good with reference to parking signs. Pawtucket, R. I., has adopted a simple sign which is giving general satisfaction. As shown on page 341, simple signs with black letters convey all the necessary information with respect to the requirements of the city ordinances, and the addition of a metal disc painted red or white simplifies its interpretation from a distance. These red discs stand out at right angles to the face of the sign and can be seen readily as one draws up to the curbing to park his car. A glance up or down the street will determine whether or not one is within the limits of the parking area, and as one learns the significance of the discs it is no longer necessary to consult and read the signs.

Two simple forms of discs have been adopted, a circular shape to indicate no parking, and a diamond shape to indicate parking for a limited period. Within the restricted district in this city parking is permitted for fifteen minutes only, so there is no necessity to letter the diamond discs. If varying time limits existed on different streets, white figures could be painted on the red discs to set forth that information. At the limit of the parking area the side of the disc facing the "no limit" area is painted white.

Thus the following is all one must remember: If, upon parking an auto, one looks up or down the street and sees circular red discs, he should know at once that he is in a "no parking" area and cannot leave his car. If he sees diamond-shaped red discs, he is within a parking area where he can leave his car for fifteen minutes. If the discs of either shape show a white face from where he observes them, he will know he is outside the parking limits and can leave his car as long as he desires.

Limitations of Municipal Power to Control Vehicular Traffic

By A. L. H. Street

In the case of Elie vs. Adams Express Company, 133 Northeastern Reporter, 243, an ordinance of the West Chicago Park Commissioners providing that no one should drive any vehicle across a boulevard at a street intersection without first stopping, nor cross at a speed exceeding six miles an hour, was held by the Illinois Supreme Court to be void. As a speed regulation, the ordinance is declared to conflict with an Illinois law forbidding municipal speed regulation of motor vehicles. And the Court finds that the measure cannot be sustained as a reasonable traffic regulation. The opinion says:

"The primary and paramount object in establishing streets and highways is for the purpose of public travel and the public and individual cannot be rightfully deprived of such use. This right to use the highways and streets for purposes of travel is not, however, an absolute and unqualified one. The right may be limited and controlled by the state, or by a municipality under its authority derived from the state, in the exercise of its police power, whenever necessary to provide for and promote the safety, peace, health, morals, and general welfare of the people, and is subject to such reasonable and impartial regulations adopted pursuant to this power as are calculated to secure to the general public the largest practical benefit from the enjoyment of the easement and to provide for their safety while using it. A municipal ordinance of a regulatory nature, in contravention of the natural rights of individuals, enacted under general charter powers, is not only required to be constitutional, but it must be reasonable as well. The court before which it is brought must be able to see that it will tend to promote the public health, morals, safety, or welfare, and that the means adopted are adapted to that end, and that it is impartial in operation, and not unduly oppressive upon individuals. In determining what is reasonable, much must depend upon the requirements of different localities, the density of population of the town in which the ordinance has been enacted, and the dangers and evils prevalent therein, and what would be reasonable in one place might be highly unreasonable in another. . . .

"To hold an ordinance of the character of the one in question valid as a regulation of traffic, the ordinance must show on its face that it is passed for the purpose of regulating traffic, and that the traffic conditions requiring regulation are the basis of the regulations imposed. If an ordinance requiring all motor vehicles to stop before crossing a boulevard at every point where such boulevard intersects a street is valid as a traffic regulation, then an ordinance requiring a motor vehicle to stop at every street intersection in the city is a valid traffic regulation. Such an ordinance would not regulate traffic, but would tend to congest traffic, and would not promote the safety or the welfare of the public. Ordinances designed to regulate traffic must therefore make a reasonable classification of the points within the jurisdiction of a municipality where the regulation shall be effective, and to make the regulation reasonable it might be necessary to designate by proper signs the points where the regulation is required and indicate thereon the regulation provided by the ordinance. For instance, at such intersections, where the municipal authorities find the traffic of such a character that it is necessary to require vehicles to come to a full stop before proceeding onto the street or boulevard, the point ought to be indicated by a 'Stop!' sign."

The Volunteer Fire Department and Its Problems

By L. B. Redford

Secretary, Volunteer Fire Department, Rupert, Idaho

A VOLUNTEER fire department is just as important to a small town as a paid department is to a large city. The members of a volunteer department must act and work in unison at all times and they must depend upon the knowledge of their chief and be just as obedient to his commands as the paid department. Failure to do so immediately causes a break in the line, and great damage is apt to result. Often a volunteer fireman takes too much authority upon himself and endangers property and lives.

In small towns where there is only a volunteer fire department, the men are really on duty 24 hours out of the day. They are not actually engaged, but stand ready to respond to any alarm of fire that may be given. They are working to a greater disadvantage than a regular or paid department. They not only leave their offices, work and homes when the alarm is sounded, but they may even run to the fire in their Sunday clothes.

A volunteer department must be organized just as efficiently as a paid department. Every member must have his station, and when he goes to a fire he must know just what he is going to do. The problems of a volunteer department are so numerous that it is almost impossible to cover all of them, but I will mention a few which I have noticed from time to time.

When a fire alarm is sounded, it usually brings out the whole population of the small town. The fire may be in the opposite direction from the fire station, but all the firemen make a run to the fire station to get out the equipment, and consequently the crowd follows close on their heels. As soon as the apparatus is out the mob changes its course and is again upon the heels of the firemen. Some of them often edge close to the apparatus and urge the firemen to travel faster. Some of the spectators take the chief's place at the head of the procession and get to the fire first, so that when the department finally arrives, the firemen must forget about the fire for a few moments and act in the capacity of traffic police to clear the people away from the plug so that a connection can be made. While the plugman is making his connection, the autos that were not so speedy arrive at the fire, and many stop within 10 feet of the plug and even pile up on the hose. By the time the plugman gets the hose clear, usually everybody is yelling for water. The plugman rushes back to his station and turns the water on and drops at the side of the plug, exhausted. Finally, the fire is out. As the people begin to return to their respective stations they have no regard for the hose lying across the road, and begin to trail across it, even though the plugman warns them not to do so.

Helpers That Hinder

The people of a small town do not stop to think that whenever they respond to an alarm of fire, they are hindering and delaying the work of the firemen. They do not stop to think of the time lost by the department in trying to keep out of the way of the spectators, but they do remember above all things to ridicule the members of the department whenever a delay is experienced in reaching the fire. They do not stop to realize that the firemen are working at a great disadvantage and for the safety of the citizens' own homes and business places.

Every town should have good fire ordinances, and the members of the department should put on a series of educational lectures so that every one may know what to do in case of fire. Every person who violates the ordinance should be arrested. This will quickly check further violations.

Another problem of the volunteer department is caused by the wilful deposit of combustible waste in alleys. In cities there is generally a health officer who visits the different business houses and makes inspections, or it may be the duty of the fire department to make the inspections. In small towns, the rule too frequently is to open the back door and throw all waste paper and rubbish into the alley, with the result that in a few days the alley is full of rubbish and is a great fire hazard.

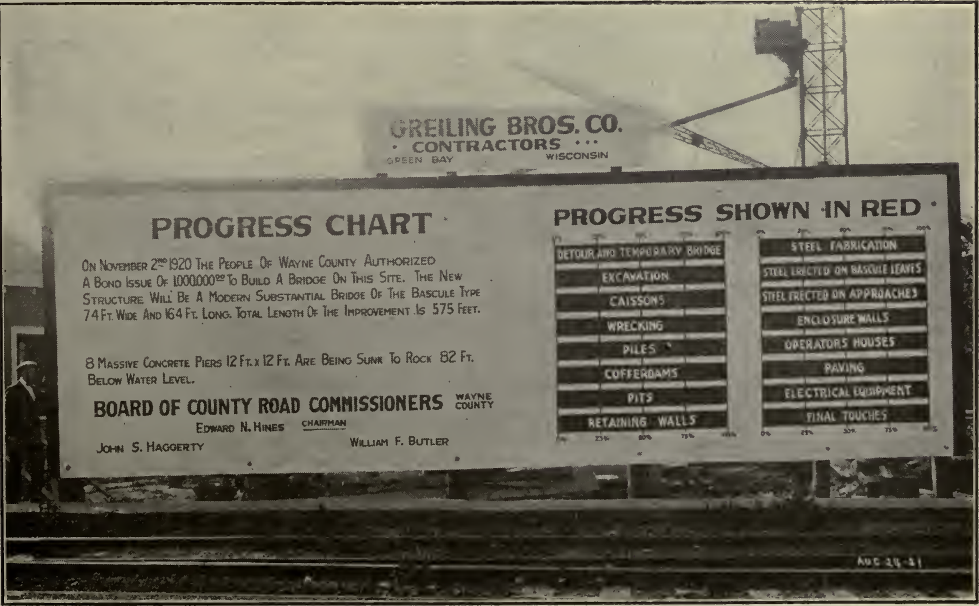
In small towns, there are usually more fire chiefs than there are in large cities. Every man on the street has a different view as to how he would have fought the fire had he been in the department. When one of these self-appointed chiefs is called upon to act at a fire, however, he does not know anything about the work and is afraid of getting his hands soiled and his feet wet. If every man in the town would get behind the fire department and give the members words of encouragement instead of abuse, volunteer fire departments would be much more efficient. Efficiency is what every town wants. We have one chief and don't need any more. We have a number of men in the department who can be depended upon, and we don't need any more volunteers; when they are needed, the chief will call upon them and press them into service.

There should be a state law that a fireman, whether he belongs to a paid or a volunteer department, shall be cared for or his family protected, in case of injury or death while in service. The volunteer fireman is working at a greater disadvantage than is the paid fireman, for he is not working for the city and does not come under the workmen's liability insurance. If he is injured, he has no recourse. If he is killed, he is buried and forgotten. Legislation is needed for the volunteer fireman as well as the paid fireman, and it is hoped that every fireman's organization will work faithfully to this end in every state.

Progress of County Bridge Construction Shown on Bulletin Board

Public Informed of Progress of Work by Chart on Full-sized Bill-Board

WHEN the Board of County Road Commissioners of Wayne County, Mich., began the construction of the Fort Street bascule bridge, the bond issue for which was passed in November, 1920, it was decided to keep the public informed of progress through the use of the large bulletin board illustrated herewith.


GREILING BROS. CO.
• CONTRACTORS •••
GREEN BAY WISCONSIN
PROGRESS CHART
ON NOVEMBER 2ND 1920 THE PEOPLE OF WAYNE COUNTY AUTHORIZED A BOND ISSUE OF 1,000,000.00 TO BUILD A BRIDGE ON THIS SITE. THE NEW STRUCTURE WILL BE A MODERN SUBSTANTIAL BRIDGE OF THE BASCULE TYPE 74 FT. WIDE AND 164 FT. LONG. TOTAL LENGTH OF THE IMPROVEMENT IS 575 FEET.
8 MASSIVE CONCRETE PIERS 12 FT. x 12 FT. ARE BEING SUNK TO ROCK 82 FT. BELOW WATER LEVEL.
BOARD OF COUNTY ROAD COMMISSIONERS WAYNE COUNTY
EDWARD N. HINES CHAIRMAN
JOHN S. HAGGERTY
WILLIAM F. BUTLER
PROGRESS SHOWN IN RED
DETOUR AND TEMPORARY BRIDGE
EXCAVATION
CAISSONS
WRECKING
PILES
COFFERDAMS
PITS
RETAINING WALLS
STEEL FABRICATION
STEEL ERECTED ON BASCULE LEAVES
STEEL ERECTED ON APPROACHES
ENCLOSURE WALLS
OPERATORS HOUSES
PAVING
ELECTRICAL EQUIPMENT
FINAL TOUCHES
0% 25% 50% 75% 100%
AUG 24-21

TELLING THE PEOPLE WHAT THEY ARE GETTING FOR THEIR MONEY

Some idea of the difficulties which were encountered in building this bridge and how they kept back rapid progress may be secured from the brief summary covering the construction of the bridge, from the Fifteenth Annual Report of the Board of Supervisors of Wayne County, Mich.:

"The passage of the bond issue in November, 1920, found us prepared to go ahead at this bridge. All preliminary investigations and plans were completed.

"In view of the importance to the public of properly maintaining traffic at this point, negotiations were immediately entered into with the Detroit United Railway to secure their permission for us to detour highway traffic over their right-of-way and their bridge, which is about 200 feet down-stream from the Fort Street crossing of Rouge River.

"As a result of these negotiations, we secured the right to use the D. U. R. property for our detour roadway, and their railway bridge itself has become our property to operate, maintain and remove at the completion of its use.

"Our permanent bridge when completed will provide car tracks which the D. U. R. has arranged to use, and, in accordance with the agreements entered into, these tracks can also be used by any other street railway that wishes to operate cars across the bridge.

"During the winter the detour was made ready to receive a concrete road, and as soon as weather permitted in the spring the concrete roadway was poured. On May 12, the old Fort Street bridge was closed to traffic and the detour was put into operation. It became necessary immediately to take steps to regulate the vehicular traffic, which was inclined to make a speedway of this wide and commodious detour.

"Due to the cooperation of the village of Oakwood and the city of Detroit, the detour is well lighted. The resulting conditions are a great improvement over those existing in the past, and the users of this detour have voiced their appreciation by many favorable comments.

"During the past winter the Detroit City Gas Company proceeded with the installation of their tunnel under the Rouge River at the site of the new bridge, and the tunnel is now completed and in operation. This tunnel takes care of the gas lines and certain cables that were obstructions to the dredging of the river and which had to be removed from their old location before the foundations of our bridge could be built.

"Bids were received on April 26, and contract was awarded to Greiling Brothers Company, of Green Bay, Wis., to construct the foundation and general substructure of the new bridge for $334,714. Work on this contract is proceeding favorably at the present time . . . . The depth of the foundation is, however, somewhat greater, as rock was located about 80 feet below water level.

"An especially difficult problem was presented at this bridge in the sinking of the pneumatic sub-pier caissons, because of the existing tunnels owned by the Detroit Edison Company and the Detroit City Gas Company. It became necessary to locate four of our caissons between the two tunnels, which are at a depth of from 40 to 50 feet below water-level. These four caissons were successfully sunk with less than 3 feet clearance from the Edison tunnel.

"If no untoward incidents occur in this foundation operation, it is probable that the new bridge will be opened to traffic by the end of 1922."

The cost of this project to date has been as follows:

FORT STREET BASCULE BRIDGE

Reconstruction of D. U. R. Bridge for a temporary bridge	$5,319.28
Building and maintaining concrete detour roadway	21,512.16
Construction of railroad sidings	9,690.26
Maintenance and operators' salaries for temporary bridge	5,195.95
Maintenance and operators' salaries for old Fort Street bridge before being discontinued	2,103.52
Foundations of new bascule	36,679.27
Leases, purchases, damages and rental of property	9,377.81
Engineering, blue-prints, etc.	22,658.16
Total Fort Street bascule bridge	$112,536.41

The progress chart on the Bulletin Board is kept up to date by painting red ribbons across each strip as the work progresses. These charts keep the public informed as to how the work is going on, and the chart can be seen by every machine or vehicle which approaches the bridge and is forced to detour. A great deal of favorable comment is made on the signs, and probably less unfavorable comment on the progress of the work is received because of the information given to the public at all times.

On the Calendar of Conventions

October 1-6.—Cleveland, Ohio.
American Society for Municipal Improvements. Annual convention. Secretary, Charles Carroll Brown, P. O. Box 234, St. Petersburg, Fla.

October 9-10.—Chicago, Ill.
International Association of Street Sanitation Officials. Annual conference. Secretary, A. M. Anderson, 37 West Van Buren Street, Chicago, Ill.

October 9-12.—Atlantic City, N. J.
Playground and Recreation Association of America. Recreation congress. Secretary, H. S. Braucher, 1 Madison Avenue, New York, N. Y.

October 16-19.—Cleveland, Ohio.
American Public Health Association. Annual meeting. Secretary, A. W. Hedrich, 370 Seventh Avenue, New York, N. Y.

October 17-19.—Pittsburg, Kans.
League of Kansas Municipalities. Annual convention. Secretary, John G. Stutz, University of Kansas, Lawrence, Kans.

October 23-25.—Detroit, Mich.
National Association of Commercial Organization Secretaries. Annual meeting. Secretary, John E. Northway, Hamilton, Ohio.

November 23-25.—Philadelphia, Pa.
National Municipal League. Annual meeting. Secretary, H. W. Dodds, 261 Broadway, New York, N. Y.

Problems in the Reforestation of Watersheds---Part I

By George R. Taylor

Chemist and Bacteriologist, Scranton Gas and Water Company, Scranton, Pa.

LITTLE can be expected of the private owner of non-tillable land in the way of reforestation, because few of us are willing to spend our time and money and labor in a cause whose benefits are to be reaped by the second and third generations. Only corporations having a continuity of existence sufficient to cover the 60 to 90 or 100 years which is necessary to grow virgin timber can be reasonably expected to make any real effort toward reforestation.

Among such corporations there are none to which forestry work should make a stronger appeal than our water-works systems, either those under private ownership or those municipally controlled. There are numerous reasons why water-works plants are particularly favorably situated for reforestation. They are frequently large owners of land which, naturally, has but few uses to which it can be put. They are interested in problems of the run-off from the catchment area, the peaks of flood and the depths of drouth, the turbidity of the streams, the sanitary quality of the water, all of which would be more or less favorably influenced were the watershed largely covered with forests. It being agreed, then, that water-works plants are vitally interested in reforestation, the problem remains of how to get it done.

Fire Protection Absolutely Necessary

Safety First is a pressing problem in these days in our own lives. Safety First, Last and Always, is the one imperative necessity in forest work and is spelled Fire Protection. The reason there are 5,000,000 acres in the "Great Pennsylvania Desert" is forest fire, which has turned our former woodlands into barren, desolate tracts. The first step in combating the forest fire evil is an efficient state forest fire system, with district fire wardens covering the entire state. Each district should have its fire towers and watchmen, and the district warden should have the authority and the money to secure men to fight forest fires. Such a state-wide system is imperatively needed if forest fire damage is to be reduced to a minimum. Supplementing state effort, there should be effective work done by the individual owner. In Pennsylvania the State Department began a thorough state-

FIRE TOWER ON SCRUB OAKS MOUNTAIN, ERECTED IN 1921 wide fight against forest fires in 1920. This year in the Scranton district there are a district warden and 150 fire wardens to cover the 2,264 miles.

Our own experience in fire protection covers 20 years of work, during 18 years of which we were absolutely alone in our efforts, receiving no help either from the state or from private owners. This fact must be borne in mind, as it has had much to do with the thoroughness of our preparations and the cost of our fire-fighting service. We hold 19,000 acres of land scattered over three counties in northeastern Pennsylvania. About 7,000 acres are in a solid tract 6 miles long and 2 wide adjoining the city of Scranton and in part within the city limits. This area is readily accessible from the city by various public roads and the 16 miles of our own macadam road which we maintain upon it. It is, in fact, a great public park through which on holidays and Sundays thousands of people pass. Because of these conditions, fires are numerous and we are forced to maintain a constant vigilant watch.

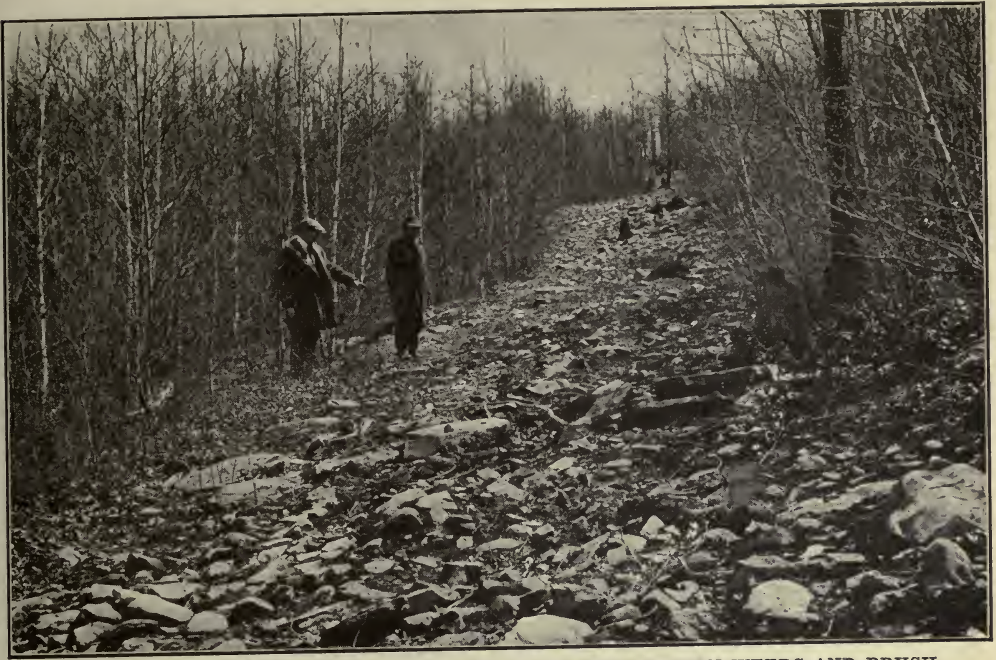
In the center of the tract we have a large farm where we keep a force of some 20 men who are variously employed in farm work, road maintenance, sawmill and forest work, general watershed care and work on the city system. A watchman is kept on the fire tower, and the men are always ready to drop their tools and rush to a reported fire. On Sundays and holidays they are kept in waiting reenforced by an automobile truck to carry them rapidly over the territory. The district is roughly bisected by a road running through the entire tract and is further cut up by our own road system. It is divided into smaller blocks by the fire and land lines, which total about 20 miles in length. The care of these fire lines, watching for fires, and fire fighting have meant an annual expenditure of about 60 cents per acre for the entire tract. This is very high, but has been rendered necessary because of the extreme fire hazard which we have to face. Even with all this care, 400 acres has been burned over in the past 10 years, or 6 per cent of the entire tract. In contrast to this, we have 3,000 acres on the head of the main stream in a thinly settled region where the only expense is to fight an occasional fire which starts from the railroad, or, again, a tract of about 1,000 acres in a thickly settled farming district where fires are practically unknown and nothing is spent on fire protection. We feel that the activity of the State Forestry Department will in the near future materially lessen these high costs as well as furnish more thorough protection.

Equipment for Fighting Forest Fires

In actual fire fighting, men are equipped with 4-gallon galvanized iron canteens, which are strapped to their backs, for carrying water, and also with chemical extinguishers, iron rakes, pails, etc. Our main reliance is placed on beating the fire out by the use of water and evergreen boughs. It will be understood that we are speaking of surface fires in the low brush which grows on the mountains, not of big timber fires. We rely on the fire lines for back firing as a last resort in case of high wind or rapid progress of the fire.

The maintenance of fire lines is a problem in itself. Probably a fire line should be looked upon merely as a line from which to back fire. From this standpoint it might be a line 2 feet wide from which all top soil has been removed to make the line absolutely devoid of vegetation. On the other hand, a 20-foot line is more satisfactory in many ways, and if a fire line is to be regarded as a line on which to hold a fire, a 20-foot line is more successful than a narrower line. In such a line the removal of the timber is followed by a growth of sprouts, weeds, and brush which is more dangerous than the original stand. Mowing and burning every fall will keep the fire line in fairly good shape, but is attended with some hazard and encourages the growth of weeds. One method of removing this second growth is by grubbing the line with pickaxes, removing the smaller sprouts by the roots and burning the line. This is expensive, as grubbing will cost from 30 to 40 cents a square yard; furthermore, it is not complete and repeated grubbings are necessary before the line becomes a barren waste.

We have experimented with chemicals in killing the vegetation on the fire lines. Most chemicals, however, as they are washed out of the soil by rain, seem to stimulate the growth of weeds. We have used gas tar on the fire lines with a considerable degree



A FIRE LINE TREATED WITH GAS TAR IN 1919 TO KEEP DOWN WEEDS AND BRUSH

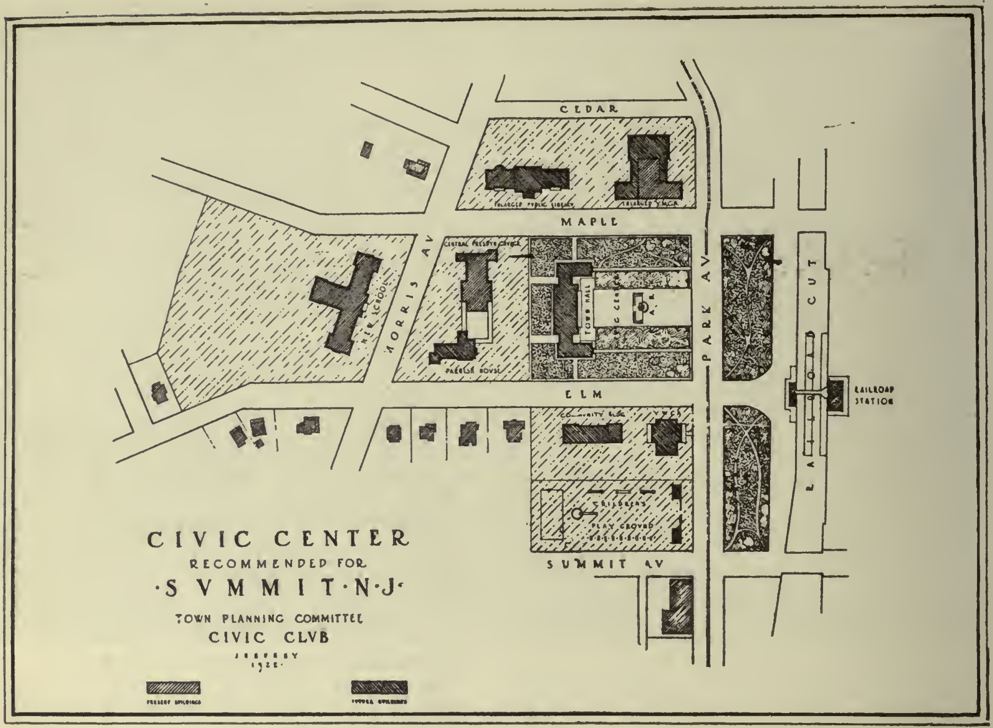
of success. Gas tar, a residue from the gas works, is a thin, sticky fluid, pours readily, is non-inflammable at ordinary forest fire temperatures, is not readily washed out of the soil by rains, and is very toxic to vegetation. We have applied this by hand, using sprinkling pots. It requires one to two gallons per square yard of fire line to be effective in killing vegetation. Just how long the tar will last we cannot say, but our lines after two or three summers are holding in good shape. We have not as yet put gas tar on a line where the only preparation had been to cut and burn the trees and brush. The quantity of tar would have to be increased, but we have no doubt that the results would be equally good, as the tar will kill sprouts of a year's growth. Gas tar is a by-product in water gas manufacture and can be sold for 5 cents per gallon. This is of tar of not more than 3 per cent water content. The tar as we have generally used it contains up to 25 per cent water, which aids in pouring it, but decreases its toxic effect. We figure that it costs us from 10 to 15 cents per square yard to apply gas tar so as to form an effective fire line.

Where coniferous timber is removed, there is left in the top layers of soil sufficient seed to insure natural regeneration of the forest. With hardwood the same result is effected by sprouts from the roots. The first fire on this tract destroys the seed and sprouts, successive fires burn out the top soil, until finally we have the barren tracts so common in the Pennsylvania mountains, where only fire cherry, birch and poplar grow. In such lands artificial regeneration is an absolute necessity. Further than that, if one wishes to control the type of tree growth, it can be done only by planting. Then, natural regeneration on lands which have been scarred by fire, even if very slightly, is extremely slow.

(To be concluded in the November issue)

Playgrounds as Character-Builders

On city playgrounds, your children will be given an opportunity to play, under trained play-leaders, at games which help them to develop both mind and body. If left to themselves, children are apt to spend their time at aimless play, which leads nowhere in particular. Yet play can be one of the biggest character-forming forces, if it is directed along the right lines. Children express their interests and powers in their games. If they are given a wide field for their invention, and their activity is guided, play becomes very important in the education of children. —Detroit Board of Education.



The Campaign for a Civic Center in Summit, N. J.

By Perry R. MacNeille

THE citizens of Summit, N. J., thirty miles out from New York, are justly proud of their city, for the works of man have not yet entirely destroyed its natural beauty. This beauty has been so counted upon by the citizens that, with exceptions so trivial that they are pitiable, no provision has been made for parks, playgrounds or other open spaces. Vacant property in the center of this city of 11,000 inhabitants has furnished, up to the present time, with its level forest floor and beautiful trees, a setting for a few of the semi-public buildings, such as the Library, the High School, the Presbyterian Church, and the Y. M. C. A. A portion of this vacant property, separated from the railroad station by a narrow little park, has been adapted to playground purposes.

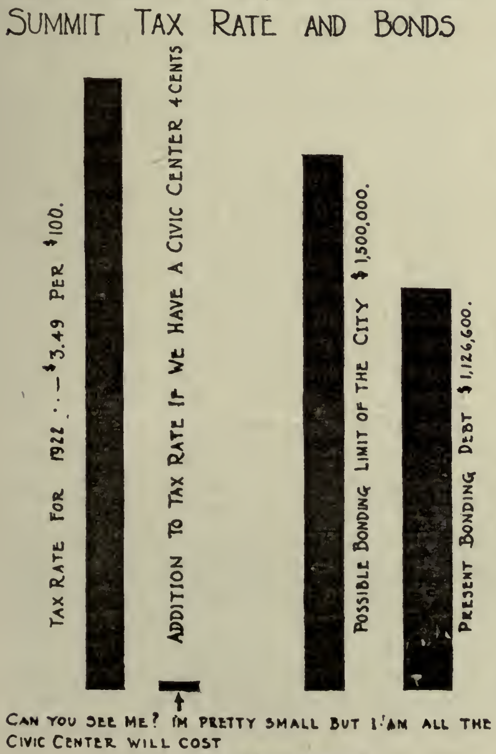
So long had this property been vacant, that the citizens had grown to count upon it as a city asset, when one morning a steam shovel was moved to the corner directly opposite the Y. M. C. A. and the work of excavating for a commercial building, crowded up to the very sidewalk line, was vigorously pushed.

The Civic Club and the Town Improvement Society at once made formal protests to the City Council, and a committee of citizens waited upon the Council and poured into receptive ears their plea that the city should buy this and surrounding property. The Council then passed an ordinance for the purchase of the property, and the ordinance came up for a reading and public hearing.

The Council Chamber, usually so deserted, was on this occasion crowded to the doors and a strong opposition to the ordinance at once made itself evident. Strangely enough, those who usually were against public parks, open spaces, civic centers, and the like—that is, those who had to pay the larger bulk of the taxes that would provide these things—were in favor of the purchase by the city, and those who would benefit most at little or no cost to themselves were opposed to the purchase. Many of the real estate men were opposed, the very men who in enlightened communities usually stand for these things, if only from selfish motives. The business men were more against it than for it, notwithstanding the fact that Summit is a city of commuters and anything that will make the city more attractive to live in will increase the population and hence the business done there. The Mayor and the City Council were unitedly and positively for the purchase, and both local newspapers united in their approval. Why this reversal of the too-frequent line-up on civic betterment?

The true reason is that men and women are seldom governed by their reason. They are swayed by their emotions. They are moved by what kindles their imagination.

Added to the forces of social, racial, religious, and political antagonism which were promptly trumped up, were the men, each with his smaller or larger following, who are against everything. Their argument is always one of cost or of unworthy motives on the part of those who wish to do things, and in this instance this argument was voiced by a gifted orator and an energetic salesman.



A STRONG ARGUMENT

The opponents first circulated a petition with no counter-activity by those in favor. Some non-voters and non-taxpayers signed it, and in many instances several signatures were in the same handwriting, but the petition was formidable and had its weight:

> "Do you want your taxes raised out of sight? If not, sign this petition.
>
> "Do you want your rent raised? If not, sign this petition."

On a $5,000 house the raise in rent would have to be 10 cents a month, but the signers thought it would be as many dollars.

The petition did not shake the decision of the Mayor and Council to pass the ordinance, however, so the opponents then got a signed protest from the payers of 10 per cent of the taxes, and by law this threw the questions to a public referendum and election, which was called for May 9, 1922.

This gave about ten weeks for the campaign. Some thought the time was too short to educate the public to a real desire for the civic center. But everybody's job was nobody's job, and weeks slipped by with nothing done.

Then the president of the Civic Club and one of its directors, a recognized leader among the Republicans, and a former councilman active in public affairs, had a conference and together selected members for a citizens' committee, of which C. H. Jagels was elected chairman.

A carefully worded, half-joking, half-earnest letter was sent to a selected list of public-spirited men of means, asking for funds. Page space was engaged in both local papers for each issue (weekly) until the end of the campaign. Permission was gained from the Mayor for a public mass meeting on the Depot Plaza Saturday night before election, and a publicity committee was appointed to gather general and special information for publicity use.

Next, a survey was made of the opposing forces: who led the different factions; what prominent and influential men were against it, and why.

In every controversy there are the assigned reasons for disagreement, and the real reasons. It is the latter that must be discovered. In this instance they had nothing whatever to do with a civic center. The civic center was merely the rallying point for the dissatisfaction of years back.

The leaders of the various racial, religious and business groups had to be seen by the right people, and the right people in each instance were those who could approach them in a spirit of friendliness, argue the avowed objections on their merits, and try to remove the real objections.

The backbone of the campaign, however, was the house-to-house canvass. Captains were appointed for the men and for the women in each ward; they selected their district lieutenants, and these, in turn, selected the lieutenants. Each lieutenant was given a card of suitable size to carry in the pocket, with space for ten signatures and addresses. Above the space for signatures was printed:

EXPRESSIONS OF APPROVAL
of the
PROPOSED CIVIC CENTER
South of Park Avenue, opposite the Railroad
Station and between Maple and Elm Streets

I am in favor of the purchase at this time of the proposed Civic Center by the city of Summit for the following reasons:

1. Summit needs a Civic Center in an accessible location around which future public buildings can be grouped.
2. Summit needs an open space in or near the congested center of the city.
3. More people pass the site of the proposed Civic Center and would therefore find it more convenient and would get more pleasure from viewing it than on any other available site.
4. It is the only site that could be seen by strangers immediately on their arrival—when first and lasting impressions are made and judgment of the city formed.
5. More public buildings are around the proposed Civic Center than anywhere else in the city.
6. The land can be purchased now at a low price and at a very great saving over what it will cost even a few years hence.
7. This is the last chance to purchase a site for a Civic Center at a low cost. If not purchased now, buildings already planned will be built upon it.

Name	Address
....	....

On a list of all the voters the names of those who were favorable were checked off as the cards were handed in by the lieutenants. The complete list was used for mailing propaganda, but the checked names only were used for mailing postal cards reminding people to register and later reminding them to vote. On election day printed slips were given to commuters at the station, reminding them to vote.

The propaganda consisted of full-page newspaper advertisements, a printed article of high literary merit and academic presentation, circular letters, graphic charts, and a proposed plan, artistically rendered, for the development of the civic center. The charts and plan were displayed in store windows, and the printed article was sent to a selected mailing list comprising the business men, the professional men and commuters. The circular letters dealt with the local situation in certain parts of the city and were sent only to those interested. The reprints of the newspaper advertisements were sent to all the voters.

Wherever the desired effect could be produced without mentioning names, this was done. For instance, one wealthy man was against the purchase because it would raise his taxes. He is a great golf player. His taxes were looked up and it was found that the extra cost to him was the equivalent of the cost of seven golf balls. This fact was mentioned in speeches, but the man's name was not mentioned.

Some landlords threatened to raise rents if the project went through. Figures were published in answer to this, with an accompanying argument headed, "Taking the Bunk out of Buncombe." The exact increases in taxes or rent due to the purchase of the civic center were given. The rent of a $5,000 house would have to be increased 10 cents a month. Property assessed at $10,000 would pay $4 a year more taxes. It was not sufficient to say that the added cost was 4 cents per $100, because even educated people make absurd mistakes in placing the decimal point in their calculations. One man whose property is assessed at $12,500 figured he would have to pay $50 a year more taxes, whereas in reality he would have to pay only $5 more.

Election day came, and the vote was disappointingly light in the morning, but when the commuters returned from New York, it came in stronger than had been hoped, a larger vote being polled at this special election than at the previous regular election. The vote was: for a civic center, 1,609; against a civic center, 991. When the results were known, the band employed by the opposition to sound their victory packed up their silent instruments and went home.

It was a great day for Summit.

Chamber of Commerce Activities in Public Affairs

Have You Contributed to This Department Recently?

An interesting letter from G. E. Comer, Secretary of the Henderson Chamber of Commerce, Henderson, N. C., laments the fact that Southern secretaries are not more often represented in this department. We have replied stating that we are always delighted to receive contributions for the department and that the space allotted to it will depend upon the number and character of such items. May we make the invitation general? This department is essentially for the secretaries, and we hope that they will find it of sufficient interest each month to make a regular habit of reading it and sending in the news of their best work along public lines.

Seattle's Great Pageant

SEATTLE, WASH.—Seattle citizens regard as a civic undertaking the annual production of "The Wayfarer," heralded as the Passion Play of America, and 6,000 men and women volunteered their services for the 1922 production held at the University stadium, July 24 to 29. The stadium seats 30,000 people. The profits from the performances go to pay off the bonds issued to construct the stadium, and no one connected with the performance, other than those engaged in the mechanical side of the production, received pay.

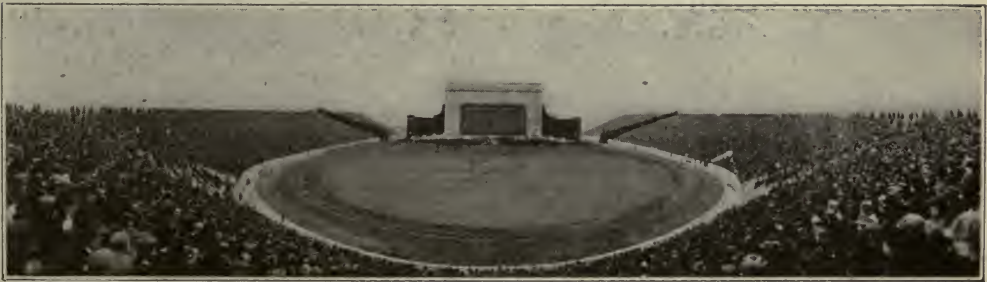
"The Wayfarer" is an inspired religious drama, written by Dr. James E. Crowther for the Methodist Centenary held in Columbus, Ohio, in 1919. It was produced for three weeks in Madison Square Garden. New York, where several critics heralded it as the greatest dramatic spectacle of the age. The scenery and electrical effects, valued at $200,000, were moved to Seattle, and the pageant was produced in the stadium on a scale far surpassing the Columbus and New York presentations.

In the costumed chorus there were 3,000 trained singers, and besides these, 3,000 other participants were seen in the episodes and the March of Nations, the most dramatic of many stirring scenes. Striking light effects, gorgeous costumes and scenery—some pieces of which were the largest ever constructed—assisted in spreading the fame of "The Wayfarer," which was produced for ten consecutive nights, with the stadium oversold the last two nights. This year transcontinental railroads recognized "The Wayfarer" as a national event.

HAROLD CRARY,
Director of Publicity, Seattle Chamber of Commerce.

Celebrates Concrete Road Opening

KANKAKEE, ILL.—A Mardi Gras celebration commemorated the completion of the first concrete highway leading into the



STADIUM OF THE UNIVERSITY OF WASHINGTON, SEATTLE, WHERE 6,000 MEN AND WOMEN PRODUCE "THE WAYFARER"—AN ANNUAL CIVIC UNDERTAKING city of Kankakee. This road connects the city with the Dixie Highway. The celebration, which brought together the rural and urban populace in a great frolic, was an unqualified success. The cost, amounting to $6,500, was largely financed through the sale of votes at 5 cents each by contestants for the honor of Queen of the Mardi Gras. The celebration opened with a giant parade in the morning, in which all the civic and fraternal organizations, manufacturers, auto dealers and merchants participated. In the evening there was a big Mardi Gras parade, followed by the coronation ball, at which many prizes were awarded and real merriment was afforded the 5,000 who attended.

J. N. SLETTEN,
Secretary, Chamber of Commerce.

Chamber's Action Assures Airport for Boston

Boston, Mass.—The campaign for a Boston airport, conducted during the past year by the Boston Chamber of Commerce, has just been brought to a successful conclusion. Work on the field has been started, and by the middle of December Boston will have what has been classed by aviation experts as the best located airplane landing field in any city on the Atlantic Coast, if not in the entire United States.

For years it had been felt that until such a field was constructed there was little chance for the development of aviation in New England. It was not, however, until the fall of 1921 that any really active campaign for a field was started.

At this time the Chamber's Committee on Post Office and Postal Facilities, which had been interested in the field primarily from the air mail side, recommended that the Chamber urge the construction of a field, but on the basis of the general value of aviation to the city, from the commercial, the military, and the air mail standpoints.

It was found that there was only one location in the city that would be practical as a flying field and yet be near the heart of the city. This was on land in East Boston recently filled by the state. As a flying

AIRPLANE VIEW OF BOSTON'S NEW AIRPORT

field it would be ideal, for it had water on three sides, and no buildings for half a mile on the fourth, and provided plenty of room for expansion. Since the field was on state land and also would be of benefit to the entire Commonwealth, it was felt by the Chamber that it should be a state proposition. The army air service agreed to lease the field for operation and control after it was prepared.

The Boston Chamber of Commerce introduced a bill in the State Legislature providing for the construction of the field, and for its leasing to the Federal Government for operation and control, on the condition that commercial flyers be allowed full use of the field. An appropriation of $35,000 was carried in the bill.

After a long fight the bill passed with an amendment providing that any difference between the $35,000 appropriated and the estimated cost must be raised by parties other than the Commonwealth before work could be started. It also provided that out of these funds two hangars must be erected for the use of the Massachusetts National Guard Air Squadron.

When the bids were opened, they were found to exceed the appropriation by $13,870, which the Chamber undertook to raise. In raising the fund, the Chamber placed great emphasis on publicity. Every day news stories were sent to the papers telling the progress of the fund; giving endorsements of the fund by prominent persons, such as the local Postmaster, the President of the Chamber, the Postmaster-General, the Commanding General of the 1st Corps Area, the Chief of Air Service, and the Secretary of War; or telling something interesting and timely about aviation that could be tied up with a Boston field.

Letters were sent to a selected list of about six hundred business men of the city, and were followed up by personal calls by Minute Men of the Chamber (an organization formed to handle special work like this) and by members of the Aero Club of Massachusetts, the Archie Club, and the National Guard Air Squadron.

The city of Boston agreed to put in the water-supply for the field at a cost of approximately $4,000. The lowest bidder had specified that his figures would hold only until August 15. On August 10 the fund was still over $3,500 short. That evening a letter was sent by President Snyder to the entire membership of the Chamber—approximately 7,500. Immediately there was a heavy response. The campaign of publicity had acquainted the Chamber members with the importance of the field, and this last-minute appeal brought in over 350 individual subscriptions, most of which were for sums ranging from $1 to $25, fully showing that the subject was one of general interest. By noon on August 15 the fund was oversubscribed by approximately $1,200, and subscriptions are still coming in.

The Chamber of Commerce feels that, in addition to guaranteeing that Boston shall have a field, the work of the past year, and particularly the few weeks' drive for the fund, has been of inestimable value to aviation in New England in that it has aroused a more general interest in this industry, and has acquainted the public with the fact that aviation is not wholly a dangerous and costly sport, but a reasonably safe and practical means of commercial communication, which will develop as fast as adequate landing-field facilities are provided.

THEODORE G. HOLCOMB,
Secretary, Boston Chamber of Commerce.

A New Tourist Camp at Pierre

Pierre, S. Dak.—In accord with the growing interest in tourists' camps, the city of Pierre, S. Dak., is planning to provide such accommodation for visitors. The Kiwanis Club of the city is responsible for the camp, and has let the contract for its construction in the local park.

The building is to be of bungalow style, costing unfurnished about $1,600. Exposed rafters and a large screened-in porch are additional attractions of ornamental and practical nature. The building will be 24 by 32 feet, and the porch 24 by 10 feet. A well-furnished rest room, 16 by 16 feet, is to be part of the interior arrangement.

The 8 by 16-foot kitchen will be equipped with laundry tubs, a sink, water, gas, and wood-burning stoves for cooking. Toilet facilities will be ample, including two shower-baths with hot and cold water. The building will be lighted throughout with electricity. The camping-grounds in the rear of the house will provide a large space for the sleeping tents of the tourists, and will be electrically lighted.

ELMER B. WHITCOMB,
Secretary, Pierre Kiwanis Club.

Lakeland Votes for Manager Plan

Lakeland, Fla.—Since the inception of the idea of a new city charter for Lakeland, the Chamber of Commerce has had its fingers, unofficially at least, in the pie.

The charter board of nine men elected last March consisted of the best men the city had to offer, and, incidentally, all of them were members of the Chamber of Commerce. The President of the Chamber was the Secretary of the Charter Board. The Chamber immediately offered its offices as a meeting-place for the Charter Board, and the Board availed itself of these quarters when it did not sit in the City Hall.

As finally passed by the Board, the new city charter was built around the city manager form of municipal government, as being the most efficient and businesslike. It also gave the city much wider powers and provided for a city planning commission. On these merits it came up for acceptance or rejection on August first.

The Chamber of Commerce was, of course, actively supporting the new charter. It had had a good deal of influence in the writing of the charter, and it thoroughly believed that it was for the best interest of Lakeland to have the charter passed. All its influence was thrown behind it. All its members got out and worked for it, talked, argued, pleaded, and finally convinced. The fight centered, of course, about the commission-manager form.

The Chamber of Commerce sent out a questionnaire to a number of the civic organizations of the cities having the commission-manager form, asking them if they preferred that form to their old one, if they would vote for it again, and what were the outstanding results of the commission-manager form. The replies were overwhelmingly in favor of having a city manager. Hardly a word was lifted in protest, and where there was any opposition, it was due to some local difficulty, limited authority, or poor commissioners or manager, rather than any inherent defect in the commission-manager form.

Armed with these data and an astonishing list of accomplished results, the Charter Board, backed by the Chamber, waged its fight for the new charter, on the street, in the newspapers, and among the organizations which the new charter gave the city an opportunity to help. The campaign wound up with a big mass meeting in the park the night before the election.

It was a close fight. There are still some politicians who are rubbing their heads and wondering where their political guessing-machines went astray. But the majority of Lakeland really felt that the time was ripe for a change, and that the charter's provisions were good, and workable. The result was that the charter passed, by a majority of 27 votes.

After the actual passing of the charter the Chamber used its influence toward getting the finest type of men to run as city commissioners, and urging on the people the importance of good men for this office, though as a Chamber it takes no active part in politics. It also engaged in collecting such data as may be useful to the new commissioners, who were elected on September 4 and took office three days later, in selecting a city manager from all those available for the office.

The three commissioners elected are among the finest business men of the city, and their selection augurs well for the success of the new charter and the city manager form of government. They had but little opposition, there being only six men in the field. Those elected received respectively 629, 608, and 559 votes. The highest vote received by any one of those defeated was only 239. A total vote of 868 was cast, which is an unusually heavy vote for this city on such an issue.

MARY BARSTOW,
Assistant Secretary, Lakeland Chamber of Commerce.

Homestead Makes Good Use of a Dump

Homestead, Pa.—In the upper section of Homestead last summer, in the midst of an attractive recently developed part of the town, there lay two unsightly lots which had served the purposes of a dumping-ground for some time previous. These lots, 110 x 150 and 110 x 250, had been purchased by the School Board years ago as prospective school sites. The Chamber of Commerce Committee succeeded in having the lots developed for playground purposes.

Teams totaling 30 workers solicited a selected list of about 200 names and collected over $600. A local contractor furnished free dirt, with the result that the dumps were filled and leveled off at a cost

HAPPY YOUNGSTERS AT HOMESTEAD'S NEW WADING POOL

of only about $300 for labor. After the first summer's work, the ground was available for baseball, and ice-skating was made possible in winter by flooding.

This summer we equipped the grounds with large swings, baby swings, seesaws, a giant slide, a baby slide, a sand house, a drinking fountain, volley ball goal posts, basket-ball goal posts, twelve park benches, and a concrete wading pool. Our Playground Committee solicited local business houses, which pledged all this equipment, worth over $1,500, either in cash or materials. The Homestead School Board also furnished one kindergarten teacher.

We conducted a Mardi Gras and Opening Celebration to acquaint the people with our work and raise money for supervisional expenses; 10,000 people attended this affair. As a result, we now have a wading pool to which children come from all quarters. Neighbors are enthusiastic over the change from an unsightly dump which smelled of defunct cats and dogs, to an attractive spot which protects the children from the whizzing autos that pass through the neighborhood.

BERNARD J. WEIS,
Managing Secretary, Homestead District Chamber of Commerce.

Work of Social Service and County Overseer of the Poor Consolidated

BURLINGTON, IOWA.—For a number of years the social service work and that of the county overseer of the poor were handled separately in Burlington, with a secretary and an office force in charge of each line of work. Experience in Ottumwa, in Marshall County, in Marshalltown, in Oskaloosa, and in Mahaska County, all pointed to the wisdom of correlating and consolidating these two enterprises. Accordingly, it was suggested to the Social Service Board, prior to a financial drive, that the consolidation be attempted.

We found that it was rather difficult to get the County Board to agree, for it meant the elimination of the official overseer of the poor. A number of the prominent social service workers, who are also members of the Board of Directors of the Greater Burlington Association, after careful investigation came to the conclusion that the suggestion should be adopted, the two activities consolidated, and a trained social service worker placed in charge so that many county paupers might be taught to become self-supporting.

When death removed the county overseer of the poor, public sentiment for consolidation had already been created, and when the Association called a joint meeting of the Social Service Board and the County Board, the two together worked out a plan of consolidating the charities. They are now under the head of a competent, trained leader, who, we believe, will solve a real community problem. With financial aid from the county in helping to maintain the office and the secretary, we hope to improve conditions and reduce the budget for the county.

C. W. BOND,
Secretary-Treasurer, Greater Burlington Association.

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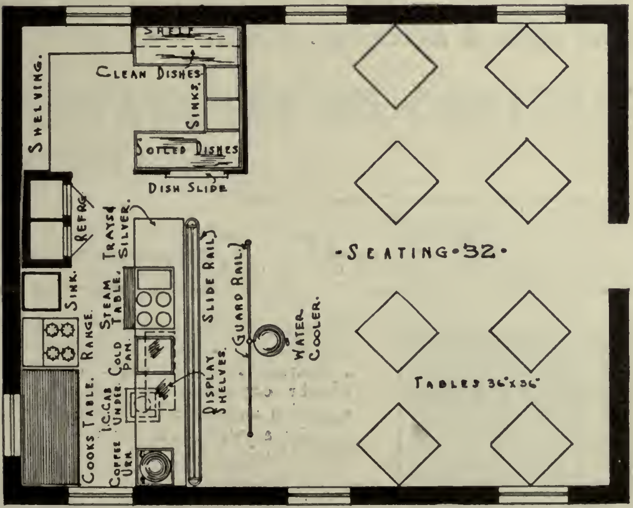
Designing and Equipping the School Cafeteria--Part I

By A. E. Merrill

ONE of the fundamental principles of education is the building of sound bodies to house and stimulate growing minds. In a special treatise on the subject a leading authority says: "The hot lunch means that the child will be better nourished. Better nourished, he can do better school work, for what is good for the body is good for the brain." For this reason the school cafeteria is considered an integral factor in promoting scholarship and is of prime importance in the planning of every school. Educators everywhere realize its importance, and practically no school to-day is planned or built without some consideration for feeding the students. However, where first the cry was for a lunch room at any cost, the demand now is for school cafeterias more durable, more economical and more efficient.

The percentage of students who immediately patronize the cafeteria varies. It is always well to plan for a maximum demand, and a safe percentage for high schools would be about 50 per cent of the total enrollment. In other words, a building housing 1,000 students should have restaurant facilities for at least 500. The next consideration is whether those desiring meals must all be fed at once, or whether it is possible to have them come in two or more shifts, 30 minutes apart. It must be remembered that the most expensive operation in cafeteria service is where all must be handled at one time. This duplicates the counter service and doubles the help needed back of the counter. Therefore, if the number runs over that which one counter will serve, shifts should be arranged if possible. The more times a service can be used, the more economical will be the operation of the restaurant, and no school dining-room should be made large enough to accommodate all at one sitting if it is in any way possible to divide them into two or more shifts. Two shifts can easily be made by allowing the boys to eat first and the girls later, or vice versa; another method is to determine the shifts according to classes.

The average complete single counter service for maximum capacity should be from 25 to 35 feet in length and will serve about 200 people every 15 or 20 minutes. As that is also the average amount of time taken at the table, a seating capacity of 200 or more is necessary. Tables can be crowded a little more than is practical in a public restaurant, and the kitchen can be made more compact. Such a single-service counter requires a minimum of 15 square feet per seat for dining-room and kitchen, as compared with 20 square feet in the commercial cafeteria, or a minimum of 3,000 square feet total. If storerooms must be included, another 1,000 square feet is



LAYOUT OF SCHOOL CAFETERIA WITH SEATING CAPACITY OF THIRTY-TWO

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advisable. It will be seen that if a single-service cafeteria were used continuously for one hour, its capacity would be approximately 800 people. This is never possible, and about one-half this number, or 400, should be taken as the basis to determine the number of services and thus decide the necessary space allotment.

A typical single service unit of maximum capacity to be used in schools of 400 or over where the estimated capacity required will be about 200 meals, uses a room about 40 by 100 feet, assuming that all storage of supplies must be included in this space, but that locker and wash rooms for the restaurant help will be provided in some other part of the building. The illustration shows a seating capacity of 224, although 200 seats are all that are absolutely necessary.

The Counters

The first and most important consideration is the counter. In this installation is shown a counter 30 feet in length, 36 inches high and 30 inches wide, divided as follows: 5 feet for trays, napkins and silver; 3 feet for bread; 7 feet for steam table; 8 feet for pastry and desserts; 5 feet for milk and cream; and 2 feet for hot drink service. The counter should be placed directly in front of the partition which separates the dining-room from the kitchen, with the rear of the counter 42 inches away from this wall.

No equipment should be placed on the dining-room side of this partition back of the counter, least of all the battery of urns. Urns are sometimes omitted when boards decide not to offer coffee as part of the menu, but they are generally included in all best grade school installations. When properly located, the urns are at the end of the counter about 2 feet away and at right angles to it. Although no preparation equipment is permissible on the back wall, there should be at least two service slides conveniently located and opening above the service tables for salads and pastry on the kitchen side of this wall. There also should be double doors for bringing replenishments to the steam table.

Much better and more rapid service can be obtained by this arrangement than by that originally used, where the counters were set further away from the kitchen wall or even in another part of the room, with service stations provided directly back of the counter. The idea originally was to have each counter girl prepare as well as serve the various items at her station. This always resulted in delays, and it is far better to separate all preparation, even to the cutting of cakes and pies, and have those at the counter give their entire attention to keeping the line in front of the counter in motion.

Above all things, the school cafeteria must be a model as far as sanitation is concerned, and this has led to an almost uniform selection of opalite glass, either black or white, for the counter top. The framework of the counter should be metal and provided with two metal shelves at the rear. One is given a choice both as to expenditure and appearance of the facing panels. Panels of glass are most frequent, but porcelained steel, galvanized sheet iron enameled, and marble are also common.

Only where counters of a temporary nature are erected should any consideration be given to a wooden cafeteria counter. In the first place, alternate heated and iced fixtures are necessary, and there was never any wood paneling made that could withstand the daily variation in humidity which such a condition creates. Warping and buckling are bound to occur, no matter how carefully each fixture is insulated from the wooden framework. In the second place, the warm section in back of the steam tables and dish-heaters attracts vermin and forms for them an ideal nesting-place which can be reached only by removal of the heated fixtures for cleaning. Metal counters are practically free from this nuisance.

Just as in school desks and furniture, the heavy base has been discarded and sanitary legs substituted, so counters are now designed to rest on 6-inch white porcelain feet. This 6-inch clearance gives an opportunity for the floor beneath the counter to be thoroughly flushed out after every meal, and any particles of food or accumulations of dust and dirt removed. It also prevents employees from using the space below the bottom shelf to dispose of old rags or any other refuse which they are too lazy to carry to the refuse container. Still another argument for the sanitary construction is the open plumbing and steam lines which it facilitates. Architects often carry this still further by providing a channel beneath the counter to carry all pipe work. This is fitted with removable metal covers, to give

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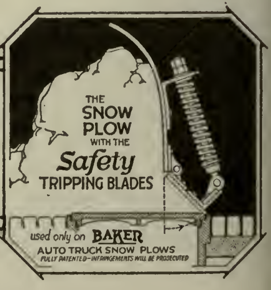
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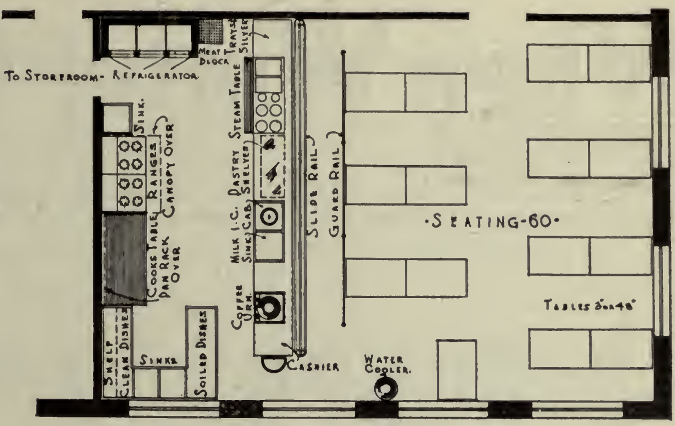

PLAN OF CAFETERIA SEATING SIXTY

Fixtures

The next consideration is the construction of the various fixtures which go in the counter. These will be described in the order in which they appear, starting with the tray, napkin and silver stand, and ending with the battery of urns.

The tray, napkin and silver stand is usually built as a part of the counter and continuous with it. If space does not permit this, it may be located at the side approach to the counter and set at right angles to it. This fixture should be 4 to 5 feet in length and have open shelves to accommodate stacks of trays below as well as on top. The top is of 1-inch white glass with a set of silver bins at the front. These are made of heavy metal covered with nickel-silver and provided with rounded bottoms to facilitate cleaning.

To speed operation, two teaspoons, a knife and a fork are usually wrapped in an 18 by 18-inch butcher linen napkin, and the silver bins are filled with these rolls. This prevents the handling of the silver by anyone other than the child who is to use it. The regulation size of the silver box is 38 by 14 inches, with four compartments. The front is formed to coincide with the thickness of the counter top, and the other four edges are flanged 1 inch to form the union between it and the glass top. This construction applies to all properly designed cafeteria fixtures and serves both to make a neat-appearing job and also to prevent crevices which fill with dirt and refuse.

Between the tray stand and the steam table there should be left about 3 feet to be used for bread and rolls. The steam table should be 7 feet in length, with one opening for a 12 by 20-inch soup tureen holding about 8 gallons, two openings 12 by 20 inches for meat pans, two for 5-inch gray jars, and six for 9-inch vegetable jars. The top of the water pan is made of nickel-silver stretched over heavy steel and resting upon a water pan of 32-ounce cold-rolled copper tinned on the inside. The pan is flanged on the ends and one long side, and the other side is provided with a 6-inch maple carving board, making the over-all width 29 inches.

This water pan rests upon a galvanized dish-heater, 36 inches high, with a single shelf without doors, to be heated by gas or steam. This rests upon adjustable iron legs, and the entire fixture is placed in a cut-out in the counter of suitable size. By this construction and by proper use of the leveling screws, it is possible to hold it entirely free from the counter frame and glass top and thus eliminate the breakage of panels and tops which would otherwise result.

The pan should be provided with either retinned copper meat pans and soup tureen or white enamel ware of the same pattern. These are stock sizes and can be secured anywhere. The gravy and vegetable dishes should be of vitrified cooking china, not stoneware or porcelain enamel. No covers are needed except on the gravy and soup tureen. These should be of copper, nickel-plated. Most states now require a counter protector to be placed in front of the steam table. This should be of ¼-inch polished plate glass 12 inches high and 12 inches wide. The glass is held in nickel-plated brackets securely bolted to the counter top. The upright sections must have 1-inch openings cut in them at top and bottom to allow the escape of steam.

Following the steam table is an 8-foot space for pastry and desserts, which should be equipped with a double display shelf above. This shelf is 19 inches high overall by 18 inches wide, with an intermediate shelf 7 inches below the top. The glass should be of ¼-inch plate with all edges

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GOOD ROADS MACHINERY Co
INC.
KENNETT SQUARE PENNSYLVANIA

SAN FRANCISCO, CAL.
CHICAGO, ILL.
KANSAS CITY, MO
PORTLAND, ORE

polished and held in a continuous nickel-plated framework made of ⅝-inch square brass tubing supported on 1-inch uprights. This stand is then bolted through the counter top to hold it rigidly in place.

The next fixture is the combined ice cream and milk cabinet, which is 5 feet in length by 22 inches in width. It is divided into two nearly equal compartments with an insulated partition between. The ice cream section will hold two 5-gallon packing cans, and the milk section four tiers of 8-ounce milk bottles. This section has removable racks, which can be taken out if it is preferred to use milk in bulk, placing the regulation milk cans in the cabinet. Salt and ice are used around the ice cream, and ice only around the milk. The interior of both compartments is lined with tinned copper, the walls insulated with 2-inch sheet cork board, and the exterior covered with galvanized iron. All exposed parts, including a hinged cover over the ice cream cans, are covered with nickel-silver, the front and ends are flanged and the fixture mounted on adjustable feet. Two feet of space for serving drinks ends the counter, and beyond this and at right angles to it is placed an urn stand 64 inches long by 24 inches wide by 36 inches high. The top of this is usually arranged to carry a three-piece battery of urns consisting of two 8-gallon coffee urns and one 20-gallon hot-water urn. The hot water urn is best fitted with a safety valve and syphon tubes to carry boiling water to the jackets and coffee jars of each urn. Faucets and gage connections should be silver plated, coffee jars of white china, and the body of each urn should be made of 32-ounce cold-rolled copper tinned on the inside and nickel plated on the outside.

Beneath the faucets the urn tray should be supplied with a drain trough 4 inches wide and the full length of the stand, and fitted with a removable nickel-silver perforated cover in two sections. The entire exposed top is of 20-gage nickel-silver stretched over steel. Beneath there should be a planished iron cup warmer of open construction, with two shelves and supported on 6-inch white porcelain feet the same as the counter, the exposed back and ends of white porcelain held in nickel-silver framework. Glass is impractical here because of the heat.

The extra size of the hot water urn insures ample supply for those demanding tea. Cream for coffee or tea is best dispensed by using a cream urn fitted with an automatic faucet which delivers the right amount for one cup of coffee or tea by one turn or pinch of the handle. The walls of this urn should be of double copper with 1-inch sheet cork insulation between. This will keep cream cold and free from danger of souring for several hours without the use of ice. The urn may be placed on the urn stand next to whichever coffee urn is being used. The faucet is easily removable and can be thoroughly washed and sterilized after each meal.

The end of the counter, or a separate stand next to it, serves as a checker's stand. This is generally of the same construction as the counter, with the white glass top replaced with one of black. The rail extends continuously from the counter across the front of this stand. A stand 36 by 24 inches by 36 inches high is sufficient. In many instances the girl, in addition to checking the trays, takes the money and thus does away with the necessity of a second girl.

The tables are separated from the counter by a guard-rail generally made of 2-inch nickel-plated brass tubing held in 36-inch uprights of the same. Similarly, the approach to the counter is designated from the entrance door. Some prefer the use of mercerized guard-rope hung on porcelained posts. The rope as well as the posts may be selected in any color and thus assist the decoration scheme of the room.

Considerable variation is found in the slide rails which are used. Originally only a single rail was provided, but lately multiple rails have been in demand. Most states require counter protection in front of steam tables, which necessitates the use of a bracket holding the rear rail far enough in front of the counter to permit the counter protector to go back of it. Slide rails should be made of solid nickel-silver tubing not over ⅞-inch in diameter. A three-bar rail extending about 10 inches in front of the counter and set with the top of the rail 2 inches below the counter top is best suited to school use. The brackets which hold this rail should be of heavy cast brass polished and nickel-plated. Such a rail is quickly cleaned and shows little wear except a

Tarvia

For Road Construction
Repair and Maintenance

Along the Rio Grande—

Twenty-five years ago the Rio Grande Valley, in southern Texas, was an arid, desert waste. Today it is called the "Winter Garden of America."

Irrigation, which the courageous, resourceful settlers secured by pumping water from the Rio Grande, has transformed the stretches of barren sand into fertile farms and plantations. And good roads, which have been obtained by surface-treating the natural caliche and adobe gravel roads with Tarvia, bring the diversified crops, worth millions of dollars annually, within easy reach of the railroads and marketing centers.

In the Valley are thriving towns, the largest of which are Mission, McAllen, Mercedes, and Harlingen. Here, too, the broad Tarvia-paved streets give unmistakable evidence of prosperity and sound, substantial growth.

In selecting Tarvia for all their road-building and road-maintenance work, these far-sighted pioneers showed characteristic good judgment.

For with no other material could they have converted, at such small expense, their unimproved roads into smooth, dustless, mudless, all-year highways.

Main Street, Harlingen, Texas
Tarvia surface treatment since 1920

Avenue of Palms, McAllen, Texas
Tarvia surface treatment since 1919

Texas Ave., Mercedes
Tarvia surface
treatment since 1919

La Lomita St., Mission, Tarvia
surface treatment since 1919

Tarvia is a dense coal-tar material. I
is unequalled for building new roads, fo
resurfacing worn-out macadam, for repai
ing and maintaining improved roads c
every type. Special grades are made fo
specific uses.

New York Chicago Philadelphia Boston
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Latrobe Bethlehem Elizabeth Buffalo
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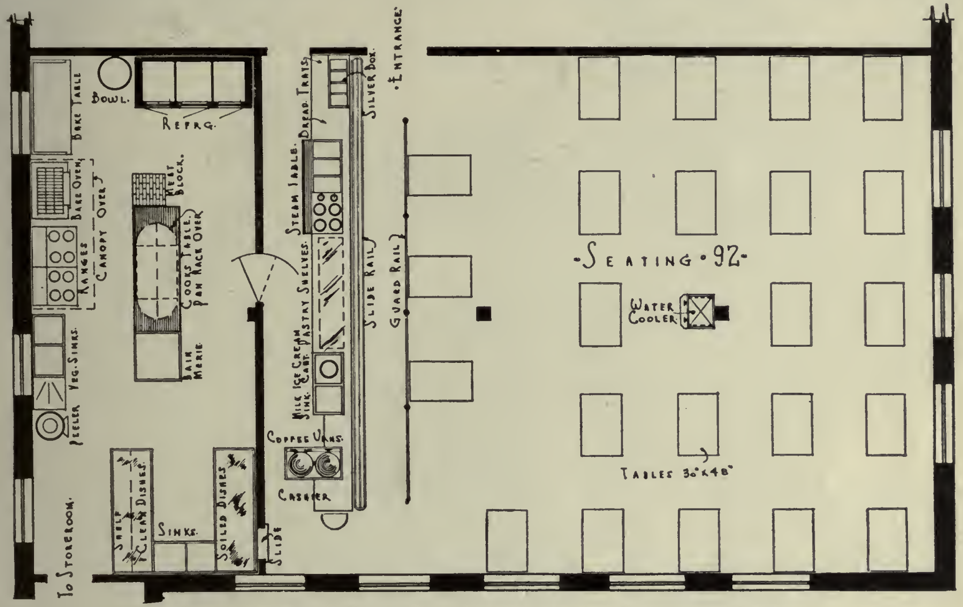
THE BARRETT COMPANY, Limited: Montreal Toronto Winnipeg Vancouver St. John, N. B. Halifax, N.S.

slight flattening of the top surface.

This description of the typical serving unit covers the construction most commonly selected and one which will longest retain its original appearance. When it is necessary to cut down the expense, the same sizes of equipment may be selected, but with all glass, porcelain, and nickel-silver eliminated and in their place painted galvanized iron used as a substitute. In such instances counter tops are made of maple or marble, and steam tables, urn-stands, etc., of polished copper or brass.

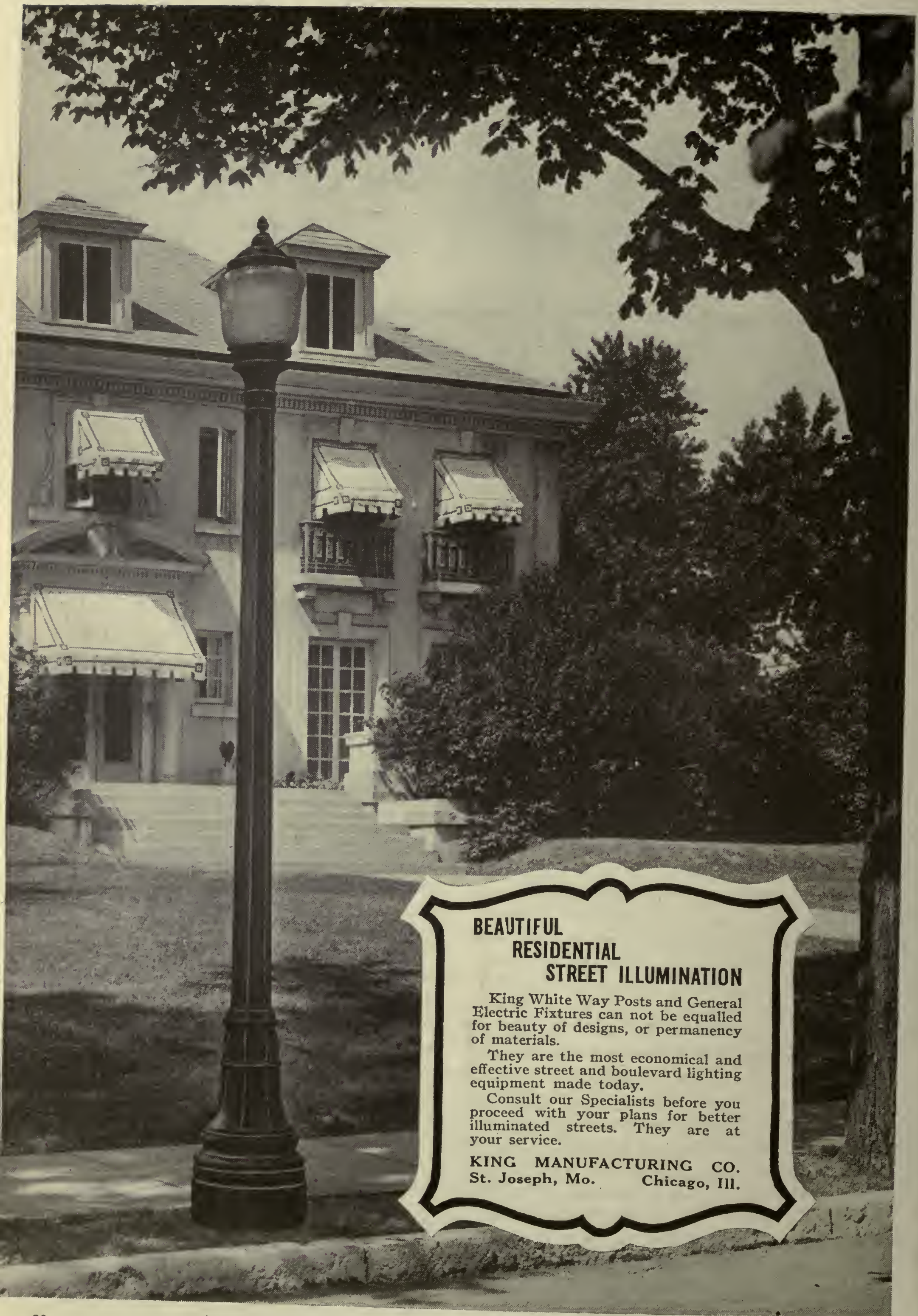
The dining-room proper should be supplied with tables, chairs and one or more water-coolers. The water-cooler is best centrally located, and consists of a copper-lined tank insulated with a 2-inch sheet cork. The walls of this tank are lined with two ¾-inch galvanized coils, having a total length of over 40 feet. Ice is packed around the coils and the end of each coil is filled with two lift-up pressure faucets. The water-supply line is connected direct to the other end of the coil and a suitable drainer attached beneath the faucets. In order to make the cooler attractive, all sides are usually covered with white glass or porcelain held in nickel-silver framework, with the entire fixture mounted on nickel uprights. At both ends of the cooler there may be a series of four white-glass shelves held in nickel-plated frames and of suitable size and height to carry a standard 12 by 16-inch aluminum tray filled with tumblers.

The tables may be either 30 by 48-inch, 36 by 36-inch or 30 by 72-inch. The first size is most common, as it is easy to handle and may be set end to end in rows of as many tables as are necessary to economize space. If 10 or 11 square feet are allowed per seat, tables may be separated to allow aisles between the rows. At least one broad aisle in each direction should be arranged to permit easy entrance and exit from the room. The table may have a ¾-inch white glass top placed on a wooden base of knock-down construction which allows adjustment of the legs to take up differences in floor levels. If a cheaper table is necessary, replace the glass top with one of wood finished with spar varnish. A well-finished wooden-top table will withstand the nine months' wear and require refinishing only during the summer vacation.



SCHOOL CAFETERIA WITH SEATING CAPACITY OF NINETY-TWO

Chairs should be light, yet substantial. The imported bentwood answers both these requirements and comes in many designs, from those selling at $36 a dozen to others at nearly that price for each. The best selection for wear is a 16-inch composition seat and a natural finish of either oak or mahogany. Domestic bentwood chairs are slightly cheaper, but their life is far less.



BEAUTIFUL RESIDENTIAL STREET ILLUMINATION

King White Way Posts and General Electric Fixtures can not be equalled for beauty of designs, or permanency of materials.

They are the most economical and effective street and boulevard lighting equipment made today.

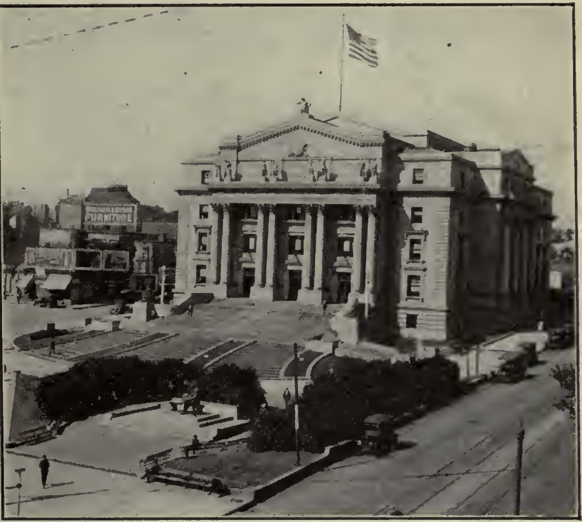
Consult our Specialists before you proceed with your plans for better illuminated streets. They are at your service.

KING MANUFACTURING CO.
St. Joseph, Mo. Chicago, Ill.

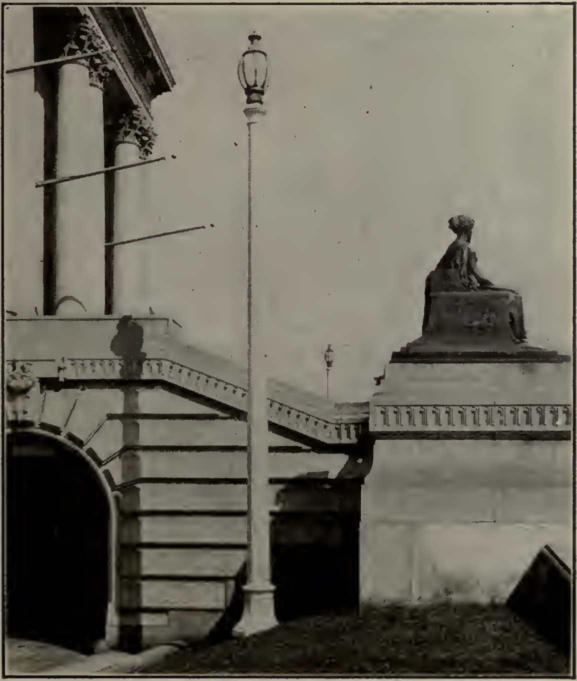
Illuminating the Facade of a County Court House

Concrete Standards Harmonize with the Building

TRAVELERS through Newark, N. J., are well acquainted with the beauties of the exterior of the Essex County Court House in that city. Only recently, however, has the exterior of this building been adequately illuminated to give a proper display of its architectural beauty at night. The lamps in the former illuminating system were mounted on two old wooden posts which were distinctly out of harmony with the $5,000,000 building.



ESSEX COUNTY COURT HOUSE, NEWARK, N. J., SHOWING WHITE MARBLE CONCRETE LIGHTING STANDARD ON EITHER SIDE OF STEPS



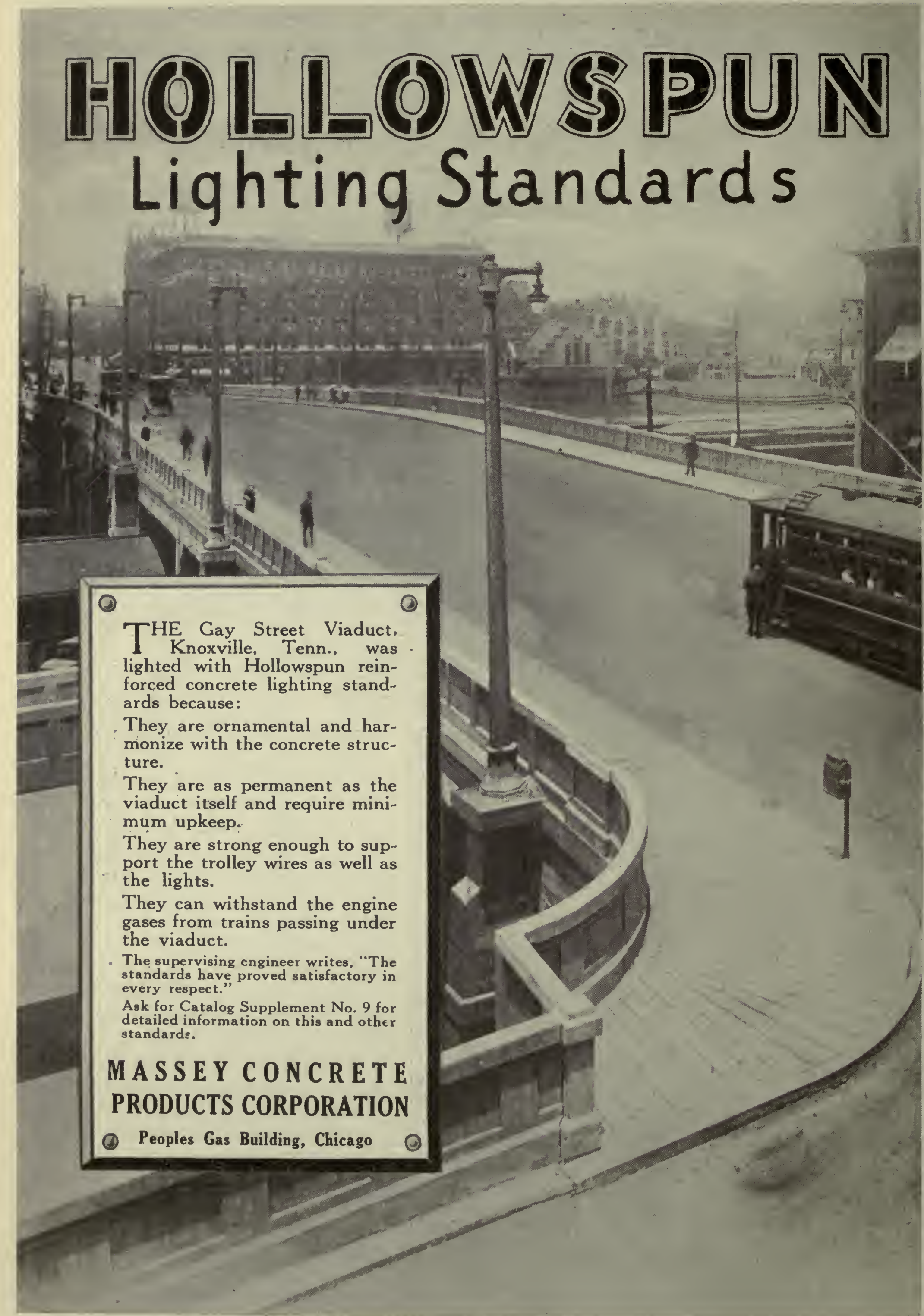
THE CONCRETE STANDARDS HARMONIZE WITH THE SURROUNDINGS

Recently, new lights have been installed on each side of the broad stairway leading up to the main entrance. These lights throw a softly diffused glow over the white marble façade and bring out more distinctly the ornamental statues which cap the wide balustrade on either side of the stairway.

The problem solved was the adequate illumination of the front of the building, which is finished in white marble with eight large Corinthian columns, and the proper illumination of the two statues on the balustrade. The use of flood lighting on the building immediately suggested itself, but such an installation would have silhouetted the fine St. Gaudens statue of Lincoln near the street in front of the building, and therefore detracted from its appearance. This limited the choice to the selection of means for mounting lights near the building. Bracket poles were considered, but were rejected because they would not harmonize with the columns which are the principal feature of the façade, and no material but concrete could be made to blend as artistically with the marble walls.

It was therefore decided to use concrete poles of an artistic design

HOLLOWSPUN
Lighting Standards



THE Gay Street Viaduct, Knoxville, Tenn., was lighted with Hollowspun reinforced concrete lighting standards because:

They are ornamental and harmonize with the concrete structure.

They are as permanent as the viaduct itself and require minimum upkeep.

They are strong enough to support the trolley wires as well as the lights.

They can withstand the engine gases from trains passing under the viaduct.

The supervising engineer writes, "The standards have proved satisfactory in every respect."

Ask for Catalog Supplement No. 9 for detailed information on this and other standards.

MASSEY CONCRETE PRODUCTS CORPORATION

Peoples Gas Building, Chicago

and with a surface which would harmonize with the marble. The consulting engineers, Runyon & Carey, Newark, N. J., had recently had experience with concrete lighting standards at the Essex County Sanitarium, Verona, N. J., and secured somewhat similar poles from the Massey Concrete Products Corporation for this installation.

The concrete poles support stippled globes and dome refractors which were adapted by the General Electric Company from one of its bronze fixtures to cap these poles. These fixtures use 1,000-candle-power lamps. The poles are in reality quite long, but they are in keeping with the lines of the building even when viewed from the lawn. From the front, however, the poles appear shorter and seem to grow out of the pedestals. They are near enough to the building to flood it with a soft light and at the same time near enough to the statues to illuminate them.

P. R. in a Nutshell

THE following concise and practically complete explanation of proportional representation was given as an after-dinner speech at the City Manager's Convention in Chicago, when Walter J. Millard, Field Secretary of the Proportional Representation League, explained "P. R." in two and two-thirds minutes:

"It stands to reason that if a representative body is to be really representative, a majority should elect a majority, but a minority should elect a minority. Assuming that your city council is nine men, therefore, you can obtain that result if approximately one-ninth of the voters can elect one man; for in that case five-ninths of the voters will elect a majority.

"In order to carry that out, the proportional system offers every voter a ballot which he can mark in such a way that his vote will be counted in one of the nine piles. He cannot know in advance whether a candidate for whom he votes his first choice will receive a quota or more than a quota. He is therefore given an opportunity to mark preferences among the candidates in the same way that you might tell someone to go to the fruit store. You would say, 'If you can't get apples bring oranges, and if you can't get oranges bring grapes.' You mark one, two, three, four, five, six, seven, etc., among the candidates' names.

"These ballots are brought together at a central counting place; a calculation is made to find what a quota is; if any candidate has more than a quota, the surplus is taken in a fair way; each ballot of the surplus is transferred to the candidate marked as next available choice on it, and when any candidate is thus brought up to a quota, he is declared elected. Then, if there are no other candidates with surpluses, the lowest man is declared defeated, and his ballots are transferred, each to the next available choice on it. Next, the candidate now lowest is declared defeated, and his ballots transferred in the same way. Thus the count is continued until finally nine piles of ballots are created. Each of these piles represents a group of voters who are unanimous under the circumstances in wanting that candidate.

"To the voter it is simpler than any other voting system, since it takes from him all questions as to chance of election and leaves his mind free only to discuss the question of the policy of the candidate. The question of count is so simple that I have taken high school boys and in twenty minutes explained it to them. I have then gone out of the room and they have elected their student councils that way ever after."

The City Engineer as "First Deputy"

The taxpayer's "first deputy" in civic construction enterprises, and particularly in street improvement, is the City Engineer. This man must faithfully represent the property owners as the one who is responsible for the success or failure of the community pavements. He must be experienced in municipal work, skilled in designing and constructing public utilities, must be courageous and ever ready to investigate new methods and materials, and willing to adapt those innovations in which he finds merit to the needs of his city. Such a man is worth many times the salary he asks. The poorest form of economy a city can adopt is to select an engineer of limited ability because he offers to attempt the direction of a city's improvements for a few hundreds or a few thousands less salary than must be paid to secure a competent engineer of genuine ability and character.

Pittsburgh Police

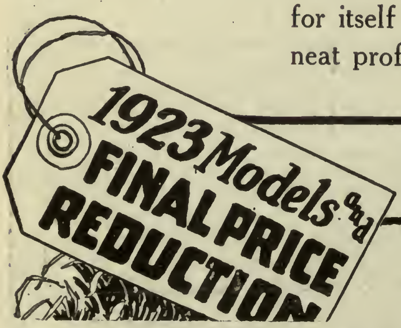
Get 25 More Harley-Davidsons

PITTSBURGH has used Harley-Davidson Police Motorcycles *exclusively* for nine years. Just recently this city purchased 25 new Harley-Davidsons after investigating several other makes of motorcycles.

Pittsburgh is one of 1,000 or more cities and towns that use "America's Police Motorcycle." In towns of 500 or 1,000 population—where one or two Harley-Davidsons are on duty—and in many large cities where scores of motorcycle policemen fight crime—this sturdy, dependable, durable, economical speed-mount is paying big dividends.

Let us tell you how a Harley-Davidson will quickly pay for itself and thereafter earn *your* city, county or town a neat profit every month for years.

Write for free illustrated literature on Police Motorcycles. Also the *new reduced prices* and the 10 *improvements* on 1923 models. No obligation to you—but you want to know what the Harley-Davidson can mean to your city or town.



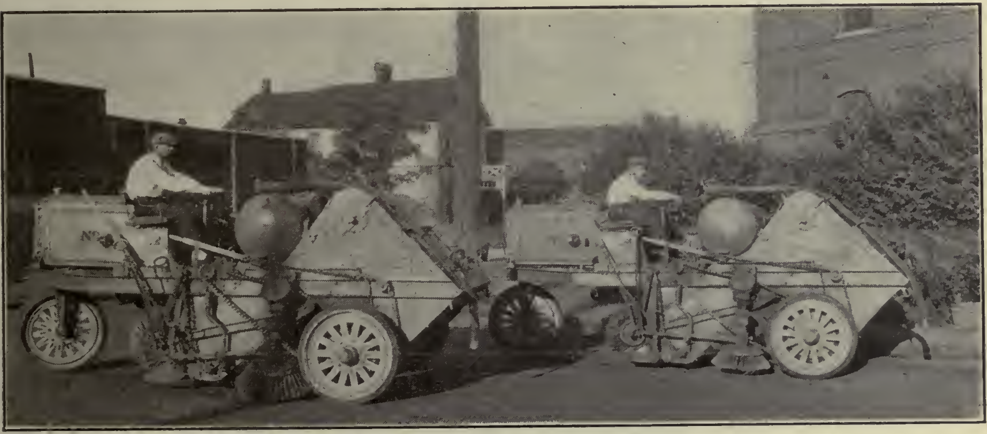
Harley-Davidson
World's Champion Motorcycle

HARLEY - DAVIDSON MOTOR CO.
MILWAUKEE, WISCONSIN

The Development of Street Sweeping

Horse-drawn Sweepers Have Been Practically Replaced by Motor-driven and Pick-up Types

FROM the horse-drawn sweeper which brushes the dirt to one side, the first step in the development of the motor-driven sweeper was one which undertook the task in the same manner. This step was taken by European engineers. A machine of this type was not built in America until after the advent of the motor pick-up sweeper. The motor-driven machine brought out in Europe cut the cost of sweeping materially, the estimates showing a reduction of 20 to 35 per cent. Following this, American engineers in 1914 brought out a machine that did what the European machine accomplished—spraying and sweeping, but it also picked up the sweepings. This still further cut down the cost of sweeping, but another step was necessary to bring a greater cut in cost and make the machine truly effective.



PICK-UP SWEEPERS WITH GUTTER ATTACHMENTS, MEMPHIS, TENN.

The first motor-pick-up sweeper did not provide means for cleaning gutters, and the result was that the labor of two gutter men had to be added to get a complete job. Increased motor traffic has resulted in pushing more refuse from the center of the street toward the gutter. Consequently, to save labor and to remove the extra refuse from the gutter, a special attachment has been developed.

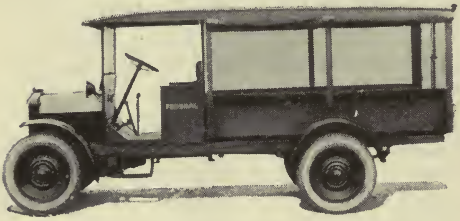
Costs given for one city may not be applicable in another, on account of the difference in the efficiency of the departments, in the personnel, or in cost-keeping methods. One city may allot capital charges to the record of the work done; another may not. One city may clean the areas near the curb and credit the unit with the pavement from curb to curb; another may credit only the number of square yards actually covered by the cleaning unit. The latter is, of course, fairest for comparative purposes, but there are many cities that use each method of figuring yardage. One Southern city whose cost was 89 cents per 1,000 square yards by horse-drawn sweepers is now cleaning its pavements with a pick-up sweeper at a cost of 9 cents. This particular city figures only the square yards cleaned in each instance.

Costs in Joplin, Mo.

Joplin, Mo., where a jump was made from hand-brooming to motor pick-up sweeping, makes the following report under date of May 19, 1922, giving figures from the payrolls and garage reports:

Average cost per month for street cleaning, based on present scale of wages, and amount of labor used, taken for a period of six months previous to the installation of motor sweeper..........	$ 1,922.31	
Cost for 48 months..........		$92,270.88

The FEDERAL *Fast Express* is Worthy of the FEDERAL Name



This FAST EXPRESS embodies all the proved points of reliability that have built a good reputation for all other Federals. This truck will serve you longer, deliver your goods faster at less expense than any other light-delivery truck. Its low price is paralleled by its remarkably low operating costs.

FEDERAL

Today, Motor trucks are a known and necessary quantity in the business world, and—thanks to Federal—a known quality as well. The new FAST EXPRESS will lower your haulage costs and at the same time deliver a high grade of steady dependable transportation. It's *Another* Federal—in every way worthy of the Federal name.

FEDERAL MOTOR TRUCK CO.
Detroit, U. S. A.

For years, the very name Federal has identified every truck that carried it as a sturdy, dependable, enduring and economical truck for the hardest use or even abuse. No matter how heavy the load, or how exacting your haulage requirements, you can safely rely upon the known and recognized superiority of Federal. We will be glad to recommend the Federal best suited to your own needs.

FEDERAL

Average cost per month for street cleaning since installation of motor sweeper, based on first six months' operation and last six months previous to this date—		
Labor	960.36	
Gasoline, oil, brooms, etc.	109.06	
Maintenance in excess of maintenance necessary for hand sweeping	50.00	
Total average cost per month	$ 1,119.42	
Cost for 48 months		$53,732.16
Cost of motor sweeper	$ 6,500.00	
Interest, 8 per cent for 4 years	2,080.00	
Total equipment cost	$ 8,580.00	
		$ 8,580.00
Summary—		
Total cost hand sweeping for 4 years		$92,270.88
Total cost motor sweeping	$53,732.16	
Total cost motor sweeper	8,580.00	
Total cost motor sweeper method		$62,312.16
Net saving by motor sweeper method for 4 years		$29,958.72

Motor Sweepers in Chicago

The experience of Chicago, which has 16 motor sweepers, is another commentary on the record of progress made in street cleaning by this method. The saving effected by comparing the latest method of cleaning streets with the earliest hand brooming is 44½ cents per 1,000 square yards. A recent municipal report from Chicago states: "Like other motor-driven machinery, they have improved steadily, until now they are reliable and serviceable and, aside from ordinary mechanical trouble, are kept in constant service during the street-cleaning season. It costs us 21½ cents per 1,000 square yards to clean with a motor sweeper, while hand brooming costs 66."

Primarily, the cost of motor sweeping depends on the mechanism used, the care with which it is kept by the department owning it, and the familiarity of the department with motor sweeping, which includes efficient routing. There are other factors which make the costs vary, but these are unquestionably the primary determining factors. As an illustration of the way costs will be reduced and performance improved as the department and operators become familiar with motor sweeping, we have the record of Washington, D. C., where motor sweeping was first undertaken in the latter part of June, 1921. It is interesting to note that the costs decreased gradually from $0.364 in the first month to $0.166 in the last month for which the record is available:

	Total Yardage	Cost per 1,000 Square Yards
July, 1921	4,441,000	$.364
August, 1921	4,222,000	.174
September, 1921	4,064,000	.214
October, 1921	3,313,000	*.351
November, 1921	3,646,000	.233
December, 1921	3,738,000	.249
January, 1922	2,932,000	†.348
February, 1922	1,875,000	.203
March, 1922	4,758,000	.182
April, 1922	5,256,000	.166

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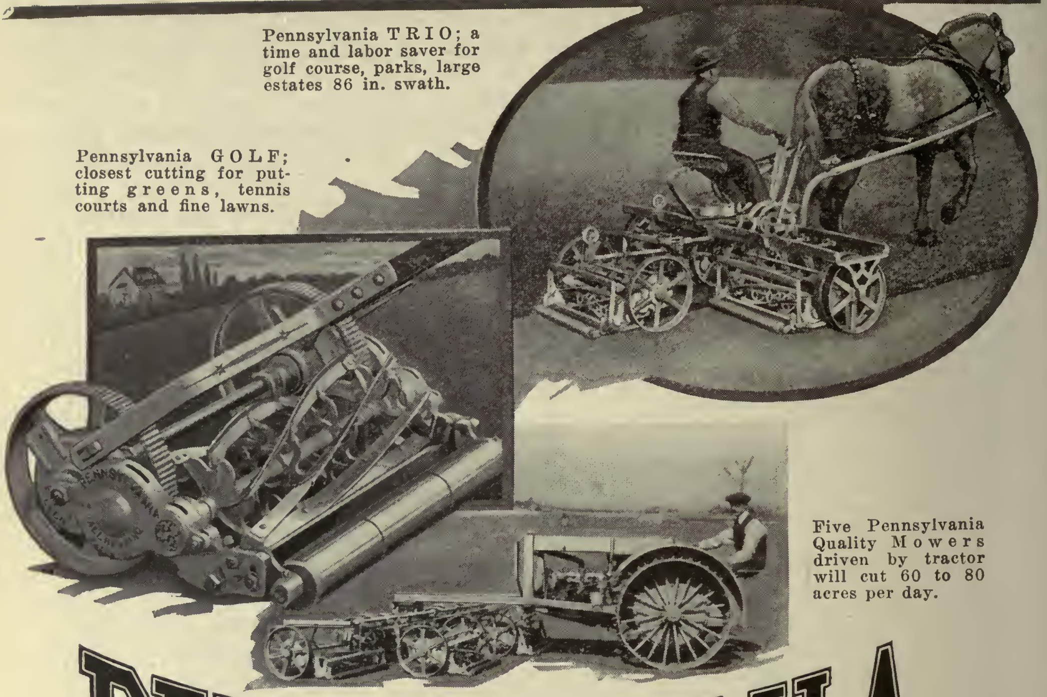
* Heavy leaf work. † Bad weather conditions.

In a general report from which the following record of street cleaning with motor sweepers has been abstracted, the data cover the entire year of 1921 and charge the department with repairs, casing and tubes, salaries, departmental charges, supplies, office supplies, storekeepers' charges, express and freight, insurance, advertisements, miscellaneous, and even ice. The totals were divided so as to show amounts properly chargeable against each department of the street cleaning work. This report, from William H. Hugo, Superintendent of Street Cleaning, Memphis, Tenn., shows that in the 8 months of 1921 after the receipt of two motor sweepers 104,913,140 square yards were cleaned. This is an average of more than 6½ million square yards per motor sweeper per month, the motor sweepers operating only in the daytime. Because of the extensive yardage cleaned, there resulted a lowering of street cleaning costs to 8 cents per 1,000 square yards by motor sweepers, and this cost included every charge against the work as described above.

Fire Prevention Day—October 9

This is a splendid institution. It provides an occasion for getting rid of accumulated trash. But the wise citizens and public officials will not let trash accumulate. They will

Make Every Day Fire Prevention Day



Pennsylvania TRIO; a time and labor saver for golf course, parks, large estates 86 in. swath.

Pennsylvania GOLF; closest cutting for putting greens, tennis courts and fine lawns.

Five Pennsylvania Quality Mowers driven by tractor will cut 60 to 80 acres per day.

PENNSYLVANIA *QUALITY* LAWN MOWERS

NO MATTER what kind of a job they have been put up against, Pennsylvania *Quality* Mowers have more than met every requirement.

Their record shows longest, most satisfactory service, least upkeep cost and greatest durability in lawn mower history.

Exclusive features, self-sharpening, crucible, tool steel blades, automobile type ball bearings, selected material and specialized manufacturing processes assure the most satisfactory and the most economical service.

Write for "Pennsylvania TRIO Book"

Pennsylvania Lawn Mower Works, Inc.
1615 North 23rd Street, Philadelphia

The City's Legal Rights and Duties

Information for City Attorneys and Other Municipal Officers, Summarizing Important Court Decisions and Legislation

Conducted by A. L. H. Street, Attorney at Law

Limitations on Right of Home-Rule Cities to Adopt Zoning Regulations

The Detroit home-rule charter was held by the Michigan Supreme Court in the case of Clements vs. McCabe, 177 Northwestern Reporter, 722, to be insufficient in its provisions to authorize the city under the guise of its police power to impose restrictions on otherwise unrestricted property by a general zoning system excluding trades and businesses from particular areas. In the course of its opinion, the Court observes:

"We may admit that the legal incorporation and organization of a city for local governmental purpose necessarily invests it with certain primary police powers within the conceded sphere of such power fundamentally essential to the ends for which it was created. But beyond the comparatively narrow limits of such necessary implication, the police power, like any other power conferred on a municipality, must be expressly delegated by the constitution or Legislature of the state.

"The assumed power of the city to zone its territory according to the extensive project in so-called 'municipal evolution' indicated by this ordinance is yet clearly within the debatable sphere of police power. No such inherent zoning power exists or can be implied in this state from the mere incorporation of a city as such.

"Of the invoked constitution and legislative authority, it may first be noted that no hint of recognition of any scheme for municipal evolution on a general zoning basis is manifested by direct mention of the subject or suggestive wording point in that direction. It is beyond question when the people of this state adopted their constitution police power was placed in the Legislature, except as distinctly reserved or conferred elsewhere. The constitutional provision conferring upon cities a greater degree of governmental independence in their strictly local concerns and the right under certain conditions to adopt, revise, and amend their charters, is not framed as a self-executing provision, but contemplates, and requires, that the Legislature shall supplement it by enactment of a general law for the incorporation of cities. Upon the scope of such law only a few definite constitutional limitations are set, with certain enumerated rights given to cities when so incorporated. The right contended for here is not amongst those specified.

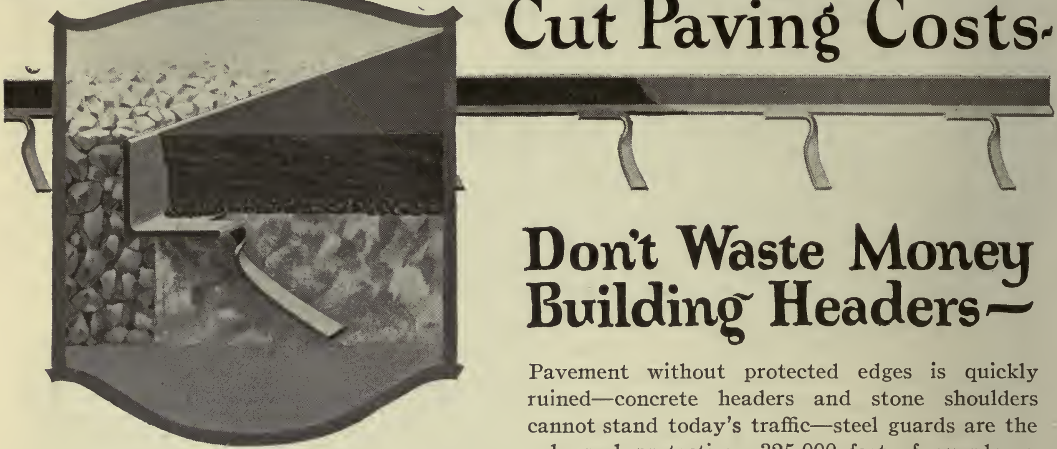
"In support of the contention that the police power invoked was directly delegated to cities by the constitution, counsel point to the provision in section 21 of article 8 authorizing a city to pass all laws and ordinances 'relating to its municipal concerns,' and assert, truthfully, that these words are 'very broad.' They are also very general and indefinite words which cannot fairly be construed to plainly designate in concrete terms, or even suggest, a direct constitutional grant of power to cities of such unusual scope and far-reaching possibilities as the yet in many respects debatable police power sought to be exercised in the proposed zoning plan. . . .

"The controlling test is whether by any adequate, definite provision in the constitution or general act passed pursuant to it, cities have been vested with this evolutionary and comprehensive police power of zoning asserted here. Independent of legislation, the constitution confers no such grant of power directly upon cities. Assuming, but not deciding, that such power is by the constitution committed to the Legislature, it has not by express grant in adequate terms delegated the same to cities."

Cities Must Maintain Culverts Sufficient to Accommodate Increased Flow of Surface Water Caused by Changed Conditions

The duty of a municipal corporation with respect to culverts to take care of surface water coming through a natural drain does not end with the original installation, but is a continuing one, to be exercised with due regard to changed conditions affecting the flow of water to be accommodated by the culverts. Even though arches and culverts over natural drains were originally adequate, the city could not wait until experience demonstrated their inadequacy by floods before making changes necessary to protect the property of landowners, if the city could reasonably be charged with knowledge that its own operations had so materially increased the flow to be expected in times of flood as to render the outlets insufficient. (Virginia Supreme Court of Appeals, City of Richmond vs. Cheatwood, 107 Southeastern Reporter, 830.)

International Steel Paving Guards Cut Paving Costs-



Don't Waste Money Building Headers—

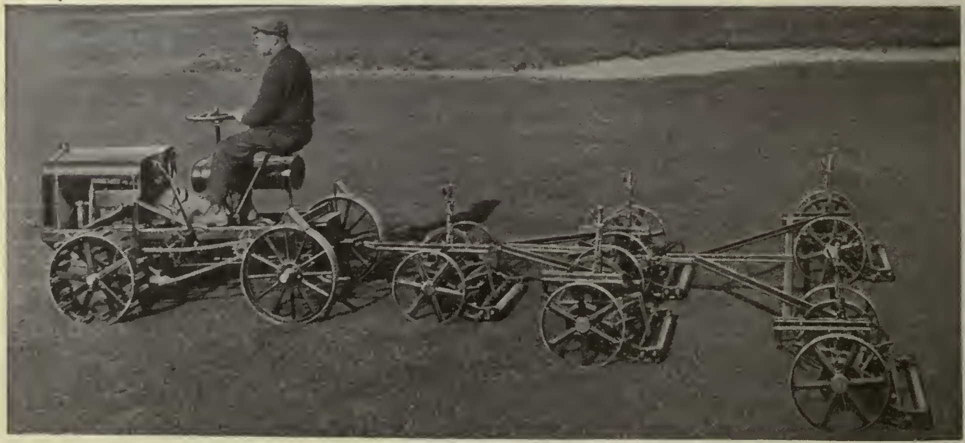
Pavement without protected edges is quickly ruined—concrete headers and stone shoulders cannot stand today's traffic—steel guards are the only real protection—325,000 feet of guards on roads of rough traffic prove their superiority and economy.

Cheaper to install—cheaper to maintain. Built in different sizes for all surfaces and foundations.

CIRCULAR ON REQUEST.

International Steel Tie Co., Cleveland, O.

THE WORTHINGTON MOWER



WORTHINGTON TRACTOR AND "CONVERTIBLE QUINT"

SPECIAL FEATURES OF THE "CONVERTIBLE QUINT"

Third section may be attached to any Shawnee Triple at present in service and instantly detached by removing a single kingbolt.

Triple mower cuts swath of seven feet.

Quint attachment increases swath to eleven feet four inches—a gain of 65 per cent.

The public is advised that the combination of gang lawn mowers with mower tractor, either of the draft or push type, is fully covered by U. S. Patents issued and pending, owned or controlled by this company; that the sale of any tractor used in combination with a gang mower may render the vendor or user liable for infringement. This company will protect its rights.

WORTHINGTON MOWER COMPANY Shawnee on Delaware, Pennsylvania

CHICAGO
53 West Jackson Blvd.

NEW YORK
8 West 40th Street

MONTREAL
109 Youville Square

Not Always Essential to Annexation Proceedings That Consent Be Obtained from Inhabitants of Territory Annexed

That, subject to constitutional limitations, the legislature of a state may authorize annexation to a municipality of territory without the consent of the inhabitants of such territory, is decided by the Missouri Supreme Court in the matter of the City of Uniondale, 225 Southwestern Reporter, 985:

"It is said that taxpayers who are opposed to incorporating a given territory into a city should be accorded the right to be heard in a proceeding instituted for that purpose, because, if sustained, it subjects them to the burdens of municipal taxation. In answer to this contention it is sufficient to say that the giving or withholding of such right is a matter that rests wholly within the discretion of the Legislature. It is not essential to the validity of the proceeding that all taxpayers who may be affected thereby have their day in court. The Legislature has the power to incorporate territory into a city with or without the consent of its inhabitants (St. Louis vs. Allen, 13 Mo. 400; Taylor vs. Carondelet, 22 Mo. 105, 110), provided it does it by general law (Const. art 9, Sec. 7)."

Police Officer's Official Bond Held Not Available to Citizen Injured

Under an ordinance requiring a supernumerary patrolman to give a bond to faithfully perform his duties, his sureties are not liable to an individual unlawfully shot by the officer while acting in his official capacity, holds the Tennessee Supreme Court in the case of Carr vs. Knoxville, 234 Southwestern Reporter, 328. The Court said:

"It is not shown that the bond sued on in the instant case was one authorized or required by any provision of the city charter. So far as the record shows, the only authority for this bond is the ordinance hereinbefore referred to, and which reads as follows:

"'All policemen, before entering upon the discharge of their duties, shall file with the recorder bonds in such penalty as the mayor shall require, conditioned for the faithful performance of their duties, and signed by two sureties to be approved by the mayor.'

"This ordinance does not authorize suits by third parties on the bonds of policemen given in accordance with the provisions of said ordinance. In other words, there is an entire absence of statutory authority for suits of this nature by third parties on bonds of policemen of the city of Knoxville."

In Alexander v. Ison et al., 107 Ga. 745, 33 S. E. 657, it was held by the Georgia Supreme Court that a citizen upon whom a tort had been committed by the chief of police of a city has no right of action therefor against him and his sureties upon a bond executed in pursuance of a provision of the charter of the city that such official shall give bond in such sum, and with such security, and shall take such oath before entering upon the discharge of his duties as the mayor and council may prescribe, and conditioned that he shall well and truly demean himself in the office to which he has been elected, and well and truly account for all moneys coming into his hands by reason of his office.

The Court in that case said:

"Upon general principles, a citizen upon whom the chief of police has committed a tort [wrong] would have no such right, for the obvious reason that there is no privity of contract between him and the bonded officer or his sureties. Being an entire stranger to the contract, it would require express legislative authority to give him a right of action thereon."

A Building Regulation Adopted from a Foreign Body by Reference Held to Be Void

An ordinance of the city of Lowell provided that in issuing permits for installation of electric wiring systems the inspector of wires should "require that the established rules and regulations of the National Board of Fire Underwriters * * * be complied with." Holding that the ordinance is invalid in this respect, the Massachusetts Supreme Judicial Court decides that there is nothing in the statutes of the Commonwealth "which empowers a city council to adopt by mere reference the rules and regulations of another and foreign body as the basis for determining the suitableness or safety of the insulation, attachments, supports or appliances for wiring designed to carry electric currents." (Cawley vs. Northern Waste Company, 132 Northeastern Reporter, 365.)

Municipality Not Liable for Defect in Firemen's Quarters

Maintenance by city of a fire department building is held by the Georgia Supreme Court to be in the exercise of governmental powers exempting the municipality from liability to a fireman injured while descending a pole from the sleeping quarters, although the pole and the floor of the building may have been negligently maintained in a defective condition. (Miller vs. City of Macon, 110 Southeastern Reporter, 873.)

Here's the Sanitary Dept. Fleet of Berkeley, California

Ten Garfords During Nine Months of Operation in Berkeley, California Haven't Missed Their Duty Once—No Repair Expense Whatever.

Ten Garford Dump Trucks are responsible for the collections of garbage and rubbish, safe-guarding the health of this wonderful California city of homes.

For nine months, since the Garford fleet was put into operation their hasn't been a single delay or missed schedule of collections in this important work.

Charles D. Heywood, Commissioner of Public Health and Safety; Elmer Bell, City Auditor; C. C. Newkirk, Sanitary Engineer; as well as other Berkeley officials not shown in the photograph, are enthusiastic over the possibilities of such truck service in the daily life of cities.

Garford reliability, in the opinion of officials who know, as well as their sturdiness under load, are the main factors in their value to municipalities.

No matter what the requirements of the job are, there is a Garford model and Garford body equipment exactly suited to it. This is because Garford engineers have patiently studied the needs of all kinds of hauling.

There is no obligation in obtaining the recommendations of Garford engineers. A communication will place at your disposal valuable facts for any public official on whom rests responsibilities that must be met.

Write today.

The Garford Motor Truck Company, Lima, Ohio

Manufacturers of 1, 1½, 2½, 4, 5 and 7½ Ton Trucks

GARFORD

DEPENDABLE TRANSPORTATION

Municipal and Civic Publications

Prices do not include postage unless so stated

CRIME, ITS CAUSE AND TREATMENT

Clarence Darrow. Thomas Y. Crowell Company, New York. 1922. X + 292 pp. $2.50.

This book endeavors to meet one of the problems which confront the world to-day. Crime waves have been common in the newspapers of recent years, and this book presents the reflections and experience of more than forty years in court. The author contends that crime, as much as insanity and disease, deserves intelligent treatment at the hands of wise and humane specialists. Some will regard the book as a plea or an apology for the criminal. To hold him blameless would justify this charge, but if man's actions are governed by natural law, the sooner such a fact is recognized and understood, the sooner will sane treatment be adopted in dealing with crime. The book is a systematic treatise which considers the subject from the standpoint of biology and psychology, as well as from the legal and sociological view-points. It covers in brief: the purpose of punishment; the responsibility for crime; environment; the criminal; the various types of crimes against person and property; the law; prevalence of crime; punishments and their effects; social control; industrialism and crime; and the important subject of pardons, paroles and remedies.

GRAPHIC CHARTS IN BUSINESS

Allan C. Haskell and Joseph G. Breaznell. Introduction by Richard T. Dana, Consulting Engineer. Codex Book Company, Inc., New York. 1922. 250 pp. Illustrated. $4.

This book, intended as a companion volume to "How to Make and Use Graphic Charts," by the same author, is a testimony to the extraordinary growth of the use of graphic methods in business during the last five years. Following the practice in the author's earlier work, there is given in this volume a biography of the principal books and articles containing material on business statistics and graphic methods. The volume itself discusses the elements of the graphic chart, the kinds best adapted to business, the making of charts, plain and ratio rulings, the time element, ratio charts, and all the other varieties of graphic presentations. As might be expected of such a volume, it is profusely illustrated with charts and diagrams which make graphic the instruction in the text.

REFERENCE VOLUMES FOR MUNICIPAL OFFICIALS

The value of the Encyclopedia Americana for municipal officials as a reference work is tremendous. Full information regarding this valuable encyclopedia may be secured by writing to the Encyclopedia Americana Corporation, Albany, N. Y.

THE CITY OF AUCKLAND, NEW ZEALAND

Municipal and Official Handbook of the City of Auckland. Edited by John Barr, Chief Librarian. Prepared by direction of the Auckland City Council. 1922. A cloth-bound volume of XIV + 242 pp. Profusely illustrated. Covering in a most interesting manner and in convenient form the development of this 70-year-old city, and showing its present activities and functions. (Apply to the Chief Librarian.)

THE POLITICAL INTEGRATION OF METROPOLITAN COMMUNITIES

A study of the political unification of metropolitan areas, by Chester C. Maxey, of Western Reserve University, published in the August, 1922, issue of the **National Municipal Review.** 24 pp. Dealing with what has been accomplished toward this end in Baltimore, Philadelphia, San Francisco, St. Louis, New York, Denver, Pittsburgh, Wheeling, and Washington, D. C., and what remains to be accomplished in Boston, Chicago, Cleveland, Alameda County, Calif., Portland, Ore., Los Angeles, Essex County, N. J., and elsewhere, and clearly summarizing the outstanding facts. (Apply to the National Municipal League, 261 Broadway, New York, N. Y.)

ANTIMALARIA WORK

"On the Possiblities of Using Mosquito Traps in Antimalaria Work." By C. W. Metz, Carnegie Institution of Washington, and Collaborating Biologist, United States Public Health Service. Reprint No. 716 from the Public Health Reports, August, 1920. Published 1922. 8 pp. Illustrated. Price 5 cents. (Apply to the Government Printing Office, Washington, D. C.)

ZONING FOR CITIES AND TOWNS

By Rolland S. Wallis, Municipal Engineer, Department of Engineering Extension, Iowa State College, Ames, Iowa, also Secretary of the Iowa Town Planning Association. Issued as Bulletin No. 52 of the Engineering Extension Department of the College, May 10, 1922. 16 pp. Covering the principles, advantages, legality and procedure of zoning, and urging its adoption for Iowa. (Apply to author.)

THE LOADING OF FILTER PLANTS

By H. W. Streeter, Associate Sanitary Engineer, United States Public Health Service. Reprint No. 737 from the Public Health Reports, March 31, 1922. 16 pp. Tables and diagrams. An abstract of this paper was read at the annual meeting of the American Water Works Association, Cleveland, Ohio, June, 1921. "The excessive loading of water-purification plants in the more populous sections of the country is rapidly assuming the proportions of a widespread and serious problem, in spite of the remarkable progress that has been made in lowering the typhoid-fever rate in a large number of our cities." (Apply to the Government Printing Office, Washington, D. C.)

WATER-SUPPLY FOR MEMPHIS, TENN.

A report to the Artesian Water Department of Memphis by Fuller & McClintock, consulting engineers, of New York City. March, 1922. 88 pp. Maps, diagrams, tables. A survey of present conditions, and conclusions and recommendations for the future development of the city water-supply. (Apply to F. G. Proutt, Chairman of the Board of Water Commissioners.)

THE GARDEN CITY

"Are Great Cities a Menace? The Garden City a Way Out." By Lawrence Veiller. 12 pp. Illustrated. Reprinted from the **Architectural Record,** Febrrary, 1922. National Housing Association Publications, No. 57. Price 25 cents. (Apply to the National Housing Association, 105 East 22nd Street, New York, N. Y.)

UNITED STATES HEALTH SERVICE

Annual Reports of the Surgeon General of the Public Health Service of the United States for the fiscal years 1918, 1919, 1920. Three separate volumes, each of several hundred pages. Dealing with many phases of Federal public health work of importance to municipalities. (Apply to the Government Printing Office, Washington, D. C.)

HOUSING IN ONTARIO

"Report re Housing for 1921, Including Town Planning of the Town of Kapuskasing." Printed by order of the Legislative Assembly of Ontario. 1922. 27 pp. Maps. Showing the work done in 1921 under the Ontario Housing Act, 1919, and in 1920 under the Municipal Housing Act of that year. Published by the Bureau of Municipal Affairs. (Apply to J. A. Ellis, Director of the Bureau, Toronto, Ont.)

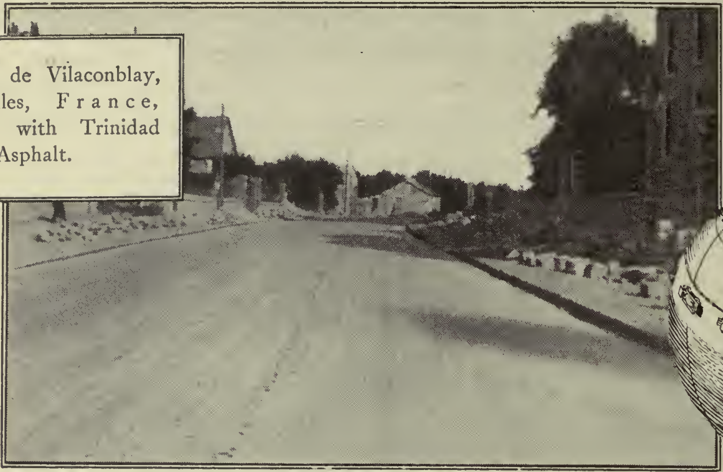
FIGHTING INFLUENZA

Framingham Epidemic and Post-Epidemic Observations of Influenza. This is Framingham Monograph No. 9 in the Medical Series of the Framingham Community Health and Tuberculosis Demonstration of the National Tuberculosis Association. Issued July, 1922. 24 pp. "For the first time, so far as is known, a normal urban population group, following an influenza epidemic, has been studied, not only statistically by mortality and by morbidity reporting, by nursing visits, correspondence, etc., but also through actual thorough physical examinations, by specialists in thoracic disease." (Apply to Donald B. Armstrong, M. D., Executive Officer, Community Health Station, Framingham, Mass.)

GALVESTON FIVE-CENT FARE DECISION

Under this title, an analysis of the most recent decision in the Galveston Street Railway fare case. The facts of the case are given in the opinion of the court delivered by Mr. Justice Brandeis. An address before the Tenth Annual Convention of the League of Texas Municipalities, Waxahachie, May 17, 1922, by Frank S. Anderson, City Attorney of Galveston, Texas. A reprint from **Texas Municipalities,** July, 1922. 8 pp. (Apply to **Texas Municipalities,** Division of Government Research, Bureau of Extension, University of Texas, Austin, Texas.)

Around the world on native-lake asphalt



Route de Vilaconblay, Versailles, France, paved with Trinidad Lake Asphalt.

Trinidad in France

Pounded by heavy, war-time traffic—day after day, month after month—without damage! That's the record of Trinidad Lake Asphalt paving on the Route de Vilaconblay Versailles, France.

Thousands of the splendid streets and highways—in all parts of the world—prove the durability of Trinidad and Bermudez native-lake asphalt pavements under the most severe conditions of climate and traffic.

Sun-baked, wind-swept and storm-beaten for ages in the tropics, these nature-made asphalts have been seasoned and toughened for long-lasting, economical service on modern streets and highways.

Quality streets and quality roads demand quality pavings. Trinidad and Bermudez pavements are attractive, resilient, noiseless and last for years with little or no cost for repairs.

Write at once for booklets describing these remarkable, age-old materials.

GENASCO
WITHSTANDS THE TEST OF TIME

The Genasco Line includes asphaltic roofing, flooring, paints and allied protective products. Write for descriptive matter.

New York
Chicago
Pittsburgh

THE BARBER ASPHALT COMPANY
PHILADELPHIA

St. Louis
Kansas City
Atlanta
San Francisco

TRINIDAD AND BERMUDEZ

THE NATIVE LAKE ASPHALTS

Methods, Materials and Appliances

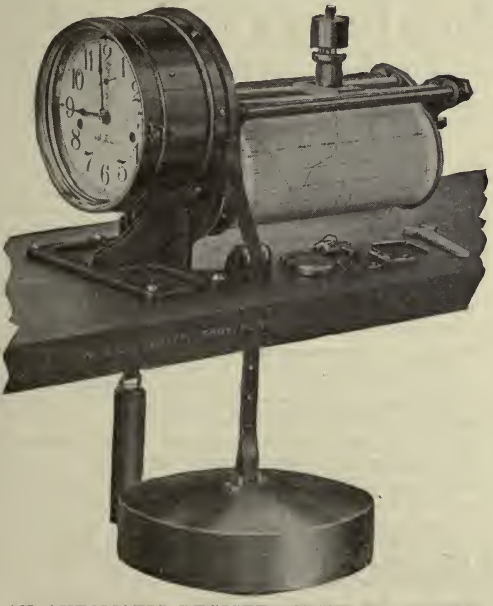
News for City and County Engineers, City Managers, Water-Works Superintendents, City Controllers, Park Superintendents, Purchasing Agents, and Others Interested in the Economical Construction and Efficient Operation of Public Improvement Undertakings

A Graphic Water-Stage Register for Reservoirs

The value of graphic water-stage registers in keeping track of the elevation of reservoirs and of the flow in sewers is well-known to municipal engineers. W. & L. E. Gurley, Troy, N. Y., have developed a graphic water-stage register with a normal range of 1 to 10 feet and a time scale of 7 days, which has been in satisfactory use for many years in various municipal and hydraulic developments. The machine is of simple construction with very few parts and is adapted for a wide range of conditions. It is constructed so that it is almost impossible for lost motion to develop from continuous service; thus the machine can be operated with minimum care and expense.

The vertical scales may be from 0 to 1 foot to 0 to 20 feet, and the time scale either 1, 4 or 7 days. As the record of the stage is made around the cylinder, there is no limit to the number of revolutions possible, and hence to the range of stage. Therefore, it is advisable to use as low a range as possible and thus obtain a more accurate reading of the water-stage. If occasionally the water-stage is above the range of the register, no trouble will be experienced in reading the water-level. The light weight of these registers makes them easily portable and hence adapts them to those special hydraulic investigations during which it is necessary to make frequent changes in the position of the register. The hydrograph or curve recording the stage and time is continuous over 7 days and presents graphically all the fluctuations of stage and their time relations. These are shown at a glance by the curve, which is a picture record of conditions. This type of record has many advantages and is especially useful in certain situations. The graphic record is easily interpreted and where desired may be quickly reduced to statistical form. The record sheets are cut to fit the cylinder closely, and the pencil carriage is adjustable, insuring an accurate setting of the gage. The gage cylinder is securely locked in place when setting the gage.

The slot which extends through the entire length of the recording cylinder, and the two guards which prevent the perforated phosphor bronze band from accidentally slipping over the spines on the sprocket wheel when the record is being taken off, prevent the observer from any change or mistake when handling the register after it has been properly installed by the engineer in charge.


AN AUTOMATIC REGISTER THAT TELLS THE WHOLE STORY ACCURATELY

A New Pump for Small Town Fire Departments

A new portable pumping outfit weighing less than 100 pounds complete and with a capacity of 2,400 gallons per hour at 70 pounds pressure and 900 gallons per hour at 155 pounds pressure, has recently been brought out by the Evinrude Motor Company, Milwaukee, Wis. The pump is a small Viking special internal gear pump, direct-connected to an Evinrude 4-5 horse-power two-cylinder, two-cycle motor. Pump and motor are mounted on a strong aluminum base and measure 31 inches over all, 11½ inches wide, 17 inches high. The pump has a 2-inch suction and a 1½-inch discharge.

This pump was brought out in response to a demand for a light, high-pressure outfit that could easily be carried by two men, for use in fighting forest fires. It has demonstrated its ability in that field and has been adopted by small town fire departments as standard equipment which can readily be carried in any automobile. At a head of 277 feet or through 1 1-3 miles of 1 1-2-inch pipe, it will deliver 1,500 gallons per hour. At a pressure of 120 pounds, it will throw a stream 100 feet through a ⅜-inch nozzle.

General Motors Trucks

GMC

Char-a-banc body mounted on G M C Chassis

GMC Bus Fits Municipal Needs

A number of municipalities are considering the operation of bus lines with GMC equipment. The success obtained by the rural school districts with GMC buses and by private operators has demonstrated the economy of this equipment.

GMC built a special bus chassis, powered with the famous GMC engine, and adapted particularly to bus work. In addition the one ton GMC chassis is used for smaller bus work, particularly in hauling school children.

GMC Trucks Wear Longer

Every part that goes into the building of GMC trucks is oversize. GMC engineers have increased the strength of the various units over that common to other trucks of like capacity to insure against the extra severe strains that a motor truck has put upon it at different times.

By doing this long life has been built into these trucks. Moreover the design of GMC trucks has been refined to the point where there is not a single wearing part in the entire chassis which cannot be replaced. Every point of actual wear is fitted with a bushing or bearing which can be quickly and easily replaced for a reasonable cost.

Additional safeguards to continuous operation and to added years of usefulness such as radius rods, magneto ignition, conduit wiring, over-sized brake drums and interchangeable brake rods are further guarantees of a longer life for GMC trucks than is common to the average motor truck. In fact, there is no way in which the life of a GMC truck can be estimated. With a reasonable amount of care it should last indefinitely.

Quality Comes First

Such painstaking care in the design and manufacture of GMC trucks has resulted from a determination that quality should be the first consideration in their building. Not only are the finest materials used in their construction but these materials are fabricated to extremely fine limits of accuracy. Special machinery, designed for the manufacture of GMC truck parts exclusively is employed in many of the operations to insure the high degree of perfection that GMC builders maintain in every truck produced by them.

Continual inspection in every process of the manufacture of these trucks starting with the rough stock and continuing after each individual operation of manufacture and assembly is a perpetual check upon the workmanship to insure that it meets the GMC standard of excellence.

And these quality trucks sell at prices that are remarkable in consideration of the value which they offer.

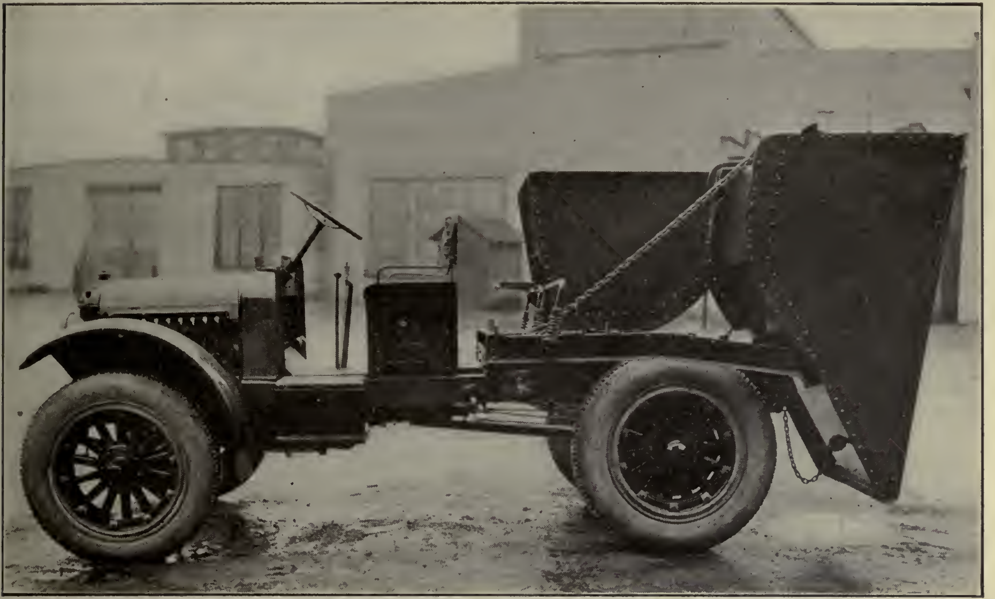
GMC chassis list at the factory as follows: one ton, $1295; two ton, $2375; three and one-half ton, $3600; five ton, $3950; tax to be added.

GENERAL MOTORS TRUCK COMPANY

Division of General Motors Corporation

Pontiac, Michigan

DEALERS AND SERVICE IN MOST COMMUNITIES



A ROAD BUILDER'S TRUCK WITH DUAL DUMP BODIES

Specialized Motor Haulage Equipment for Highway Construction

To meet the demand for small, efficient transportation equipment for highway work, the engineering staff of the Republic Truck Sales Corporation, Alma, Mich., has designed a road builder truck, specifically adapted to the requirements of contractors and municipal and county highway departments for highway concrete construction. In order to provide the necessary maneuvering ability in operating over subgrades, the chassis has a wheel-base of only 110 inches, with a turning radius of 15½ feet, and is equipped with pneumatic tires. The body is mounted comparatively low and is well-balanced over the rear axle with approximately 40 per cent of the total load carried on the front wheels.

The Republic Road Builder is also used for building hard-surfaced gravel roads as well as for concrete construction. Contractors and municipal highway officials have also found them useful for hauling gravel from the pit and stone from the quarries to the crusher. Fleets of these trucks are in operation in Illinois, Michigan, and North Carolina. The Davis-Wilcox Construction Company, Charlotte, N. C., operates a fleet of five, and the Knoll Construction Company, also of Charlotte, is using them in connection with the dry mix system over an average haul of seven miles. The Powell Paving Company, Blithe Brothers, and the Mulligan Construction Company, all located in North Carolina, are successfully operating fleets of these trucks on concrete construction.

* * *

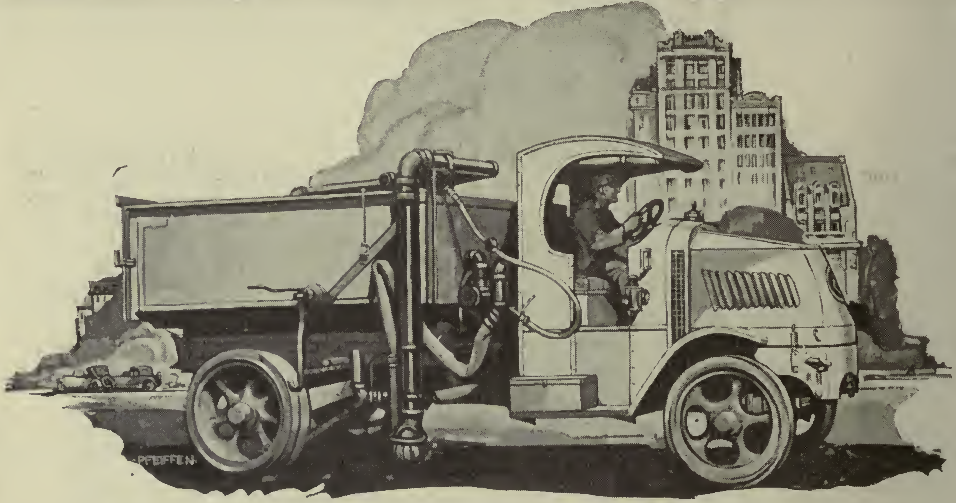
Seattle Orders New Equipment for Gorge Power Plant

The city of Seattle, Washington, has recently placed with the Westinghouse Electric and Manufacturing Co., Pittsburgh, Pa., orders for equipment for its new Gorge hydro-electric plant. This plant is located on the Skagit River about 100 miles from the city and will tie in with the other municipal plants now in operation. Its initial capacity will be 60,000 kilovolt amperes, but an ultimate capacity of 180,000 kilovolt amperes is planned. The ultimate capacity of the entire municipal system will be 500,000 kilovolt amperes.

The new contract is for switching equipment. The plant is to have a control desk containing three generator sections, one of which is for future equipment and one section for the transmission line. There will also be a relay and metering switchboard with the same arrangement as the control board. An auxiliary switchboard, composed of 14 panels, will be provided for the control of the station circuits, exciters, etc.

Six type "SK" 75-kilowatt service transformers, three of which are 6,600 to 440/220 volts and three 6,600 to 220/110 volts are included in the order. Three of them will be used for starting a spare exciter motor generator set and three for station, light and power transformers. Three 833 kilovolt ampere oil immersed, water-cooled transformers, each 11,000 volts high tension and 6,600 volts low tension, will provide station power and local feeder service.

On the high tension bus and transmission lines, which will operate at 165,000 volts with solidly grounded neutral, three-pole, 155,000-volts, 400 ampere, electrically-operated oil cir-



Special Equipment for Catch-Basin Cleaning

THE Otterson Auto-Eductor is effecting marked savings of time and money in many municipalities today. This apparatus is mounted on a 5-ton Mack chassis and consists of a large steel tank, powerful centrifugal pump, hose, connections, etc. It is operated entirely by the truck engine, and constitutes the most efficient outfit made for cleaning catch-basins or corner inlets.

The efficiency of the whole apparatus—truck and eductor—makes possible an immediate saving of from 25% to 75% in the cost of doing such work by obsolete methods. The distinct combination of advantages in the apparatus is its flexibility, its speed of operation, coupled with the low operating cost and long life of the Mack chassis. Specifications will be sent upon request.

Our latest "Municipal Equipment Bulletin" contains detailed descriptions of the most comprehensive line of municipal transport apparatus available today.

You should have a copy. Simply drop us a post-card requesting it.

INTERNATIONAL MOTOR COMPANY, 25 Broadway, New York

Branches owned by this Company operate under the titles of: "MACK MOTOR TRUCK COMPANY" and "MACK-INTERNATIONAL MOTOR TRUCK CORPORATION."

Capacities: 1½ to 7½ tons

Mack TRUCKS

Tractors to 15 tons

"PERFORMANCE COUNTS"

cuit breakers will be used. These have an interrupting capacity of 4,000 arc amperes at 165,000 volts. Three-pole, 15,000 volt, 2,000 ampere, electrically operated oil circuit breakers with an interrupting capacity of 30,500 arc amperes at 12,000 volts will be used for control of the generators and the low tension side of the step-up transformers and the high tension side of the power and local feeler transformers.

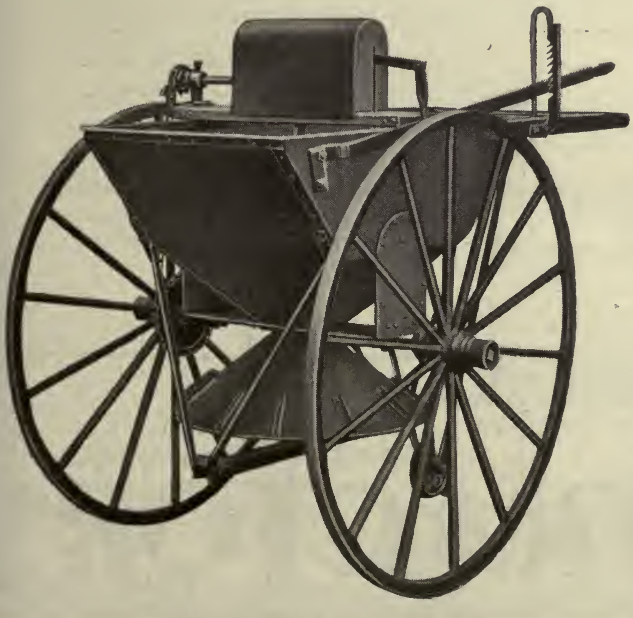
All high tension switching equipment will be mounted indoors and the connections to the transmission line will be made by means of 400 ampere, 165,000 volt, condenser type roof bushings.

Sanding Slippery Streets and Sidewalks

The time is rapidly approaching when street superintendents and other municipal officials will think seriously of sanding streets, particularly on grades, to prevent the slipping of horses and trucks. This "safety first" expedient is repaid many times in freedom from accident.

Warren Brothers Company, 9 Cambridge Street, Boston, Mass., manufactures a stone- and sand-spreading cart which evenly spreads a thin film of sand or grit on a pavement, throwing the material to a considerable distance in all directions. This cart, which is substantially constructed, can be handled by one man. It is equipped with a galvanized sheet steel body, large-diameter wheels and small pilot wheel for balancing it when standing.

The sand or grit falls through an opening in the bottom of the carrying hopper upon a revolving cone, which throws it uniformly over the surface of the street. The distributing cone is revolved by means of a chain and sprockets, the sprocket on the counter-shaft being equipped with a friction clutch, which permits throwing the revolving mechanism out of gear when carrying a loaded cart from the source of supply to the area to be sanded, and also when moving the empty carts about. This considerably minimizes the labor of hauling the cart. The flow of sand from the carrying pan to the revolving cone is controlled by means of a lever extending to the left hand of the operator. The cart distributes the sand much more evenly and economically than can be done by straight hand labor.



A SANDING CART FOR CITY USE

Demonstration of Road Maintenance Outfits

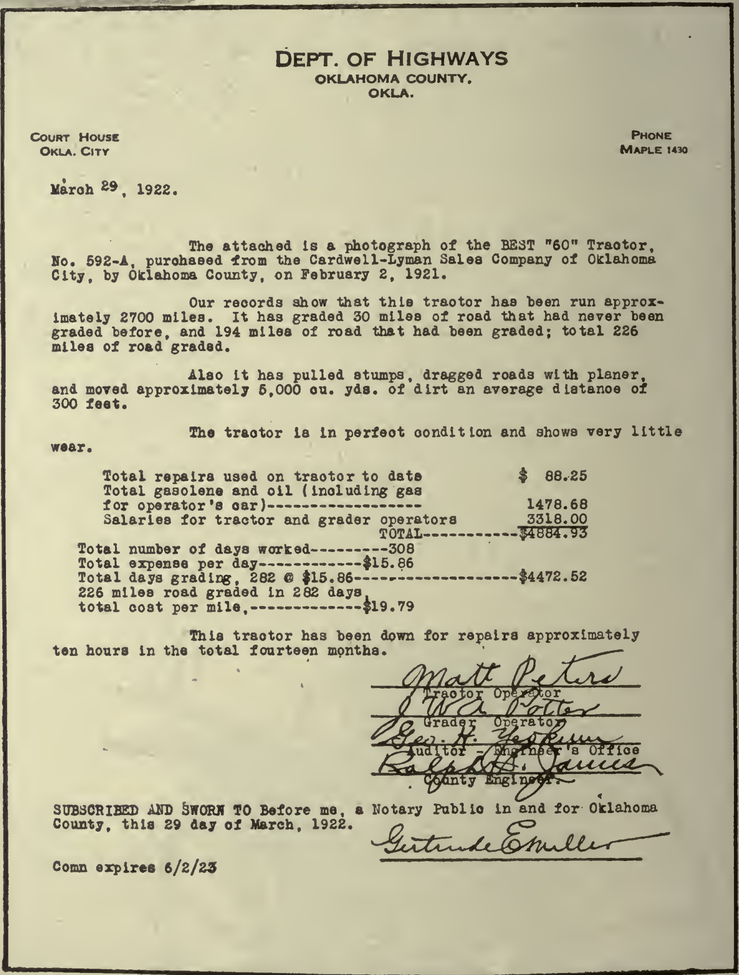
Municipal officials will be interested to know that the Avery Company, of Peoria, Ill., has over one hundred demonstrating crews out with Avery one-man "Road-Razers," demonstrating the machine in every Avery branch house territory in the United States. Street superintendents and other municipal officials wishing a demonstration of this machine in their own cities can secure it without charge or obligation by writing to Henry J. Barbour, the Avery Company, Peoria, Ill.

The new model Avery one-man power-lift Road-Razer has a special power-lift device connected with the motor and transmission, which enables the operator to raise or lower the blades instantly by merely tripping a lever. This is a special feature of this machine alone. The blades are also arranged so that the angularity is changeable; for instance, they can be changed from a position required for maintenance work to a position of greater angle for doing such work as moving dirt after a grader or for removing snow.

All the gears on this machine are entirely enclosed and run in oil. The machine is also equipped throughout with roller and ball bearings. It has an improved ball bearing turntable on the front wheel, with two sets of solid steel balls running in oil. It has a removable flange on the front wheel and also a friction brake. The machine is provided with a platform and a comfortable cushion seat and back rest for the operator. It has a fuel tank holding 20 gallons, the tank and the hood being separate. It is equipped with an improved type of muffler, handy tool box, draw-bar attachment for pulling wagons, oil tanks, cement mixers, etc.

Street Sanitation Convention Date

The International Association of Street Sanitation Officials has changed the date of its October conference to Monday, October 9, and Tuesday, October 10, in the east room, mezzanine floor, Hotel LaSalle, Chicago, Ill.



DEPT. OF HIGHWAYS
OKLAHOMA COUNTY,
OKLA.

COURT HOUSE
OKLA. CITY

PHONE
MAPLE 1430

March 29, 1922.

The attached is a photograph of the BEST "60" Tractor, No. 592-A, purchased from the Cardwell-Lyman Sales Company of Oklahoma City, by Oklahoma County, on February 2, 1921.

Our records show that this tractor has been run approximately 2700 miles. It has graded 30 miles of road that had never been graded before, and 194 miles of road that had been graded; total 226 miles of road graded.

Also it has pulled stumps, dragged roads with planer, and moved approximately 5,000 cu. yds. of dirt an average distance of 300 feet.

The tractor is in perfect condition and shows very little wear.

Total repairs used on tractor to date $ 88.25
Total gasolene and oil (including gas for operator's car)------------------- 1478.68
Salaries for tractor and grader operators 3318.00
TOTAL------------$4884.93
Total number of days worked---------308
Total expense per day------------$15.86
Total days grading, 282 @ $15.86--------------------$4472.52
226 miles road graded in 282 days,
total cost per mile,-------------$19.79

This tractor has been down for repairs approximately ten hours in the total fourteen months.

Matt Peters
Tractor Operator
J W A Potter
Grader Operator
Geo. H. Yeokum
Auditor - Engineer's Office
Ralph H. James
County Engineer.

SUBSCRIBED AND SWORN TO Before me, a Notary Public in and for Oklahoma County, this 29 day of March, 1922.

Gertrude E Miller

Comn expires 6/2/23

Write for full data, prices and the names of our nearest dealers. Let us give you the details of how economically Best Tractors build and maintain streets and roads.

C. L. BEST TRACTOR CO.

Factory and General Office
SAN LEANDRO, CALIFORNIA

Distributing Warehouses
SPOKANE, WASH., ST. LOUIS, MO.

BEST TRACTORS

"ANIMATED STREETS" traces the development of street lighting in an interesting way from earliest times to the present day. In addition, it contains valuable information on modern street lighting methods. The book will be sent upon request to municipal officials and others who are interested in street illumination.

MACBETH-EVANS GLASS COMPANY
PITTSBURGH

Registered U.S. Pat. Off.

Visit our Booths 14-15 at the Annual Convention of the American Society for Municipal Improvements at the Hollenden Hotel, in Cleveland, October 2-5.

NEW YORK

AND

Ashokan Reservoir Road being built with TEXACO ASPHALT in 1914 by the Board of Water Supply of New York City.

In an issue of a leading engineering journal of April, 1920, George G. Honness, Department Engineer, Board of Water Supply, writes this of the Ashokan Reservoir Road built of TEXACO ASPHALT:

"The oldest pavement has now been in use six years, passing through six winter seasons, and is in excellent condition, as anyone who has had the privilege of riding around the Ashokan Reservoir can testify."

Part of the 32 miles of TEXACO Asphaltic Concrete surrounding Ashokan Reservoir, New York.

The chemists and engineers who have charge of road and street construction in New York City are experts in their fields, the same as the road builders of every great community.

The fact that there are durable TEXACO ASPHALT streets giving long and excellent service in New York City is one of the evidences of TEXACO'S high quality.

TEXACO

The Texas Company

Asphalt Sales Dept., 17 Battery Pl., New York City

New York
Philadelphia
Richmond
Boston

Jacksonville
Atlanta
New Orleans
Memphis

Chicago
Cleveland
Oklahoma City
Dallas

Kansas City
Houston
Minneapolis

KANSAS CITY

AND

TEXACO Asphalt Macadam on Linwood Boulevard, Kansas City, Missouri. This pavement was laid in 1913. Photo taken 1920.

World-fame has rested its mantle on Kansas City, that thriving, pulsating center of Western business activity. This fame has come through the marvelous Park and Boulevard system of which Kansas City proudly may boast.

For sheer splendor and natural scenic beauty the Park System of Kansas City is unsurpassed. And this system is matched in excellence by the 90 miles of improved boulevards which lead to and wind through the parks.

TEXACO Asphalt Macadam on Ward Parkway, Kansas City, Missouri. Pavement laid in 1916 and photograph taken in 1920.

To accomplish this great system of Parks and Boulevards, careful and expert planning was necessary. Likewise, materials of the highest quality were demanded for construction that would harmonize with the surroundings.

We point with pride to the fact that TEXACO Asphalt has played and is playing a large and important part in the construction of many thousand square yards of the roadways in Kansas City and its parks.

TEXACO

The Texas Company

Asphalt Sales Dept., 17 Battery Pl., New York City

New York
Philadelphia
Richmond
Boston

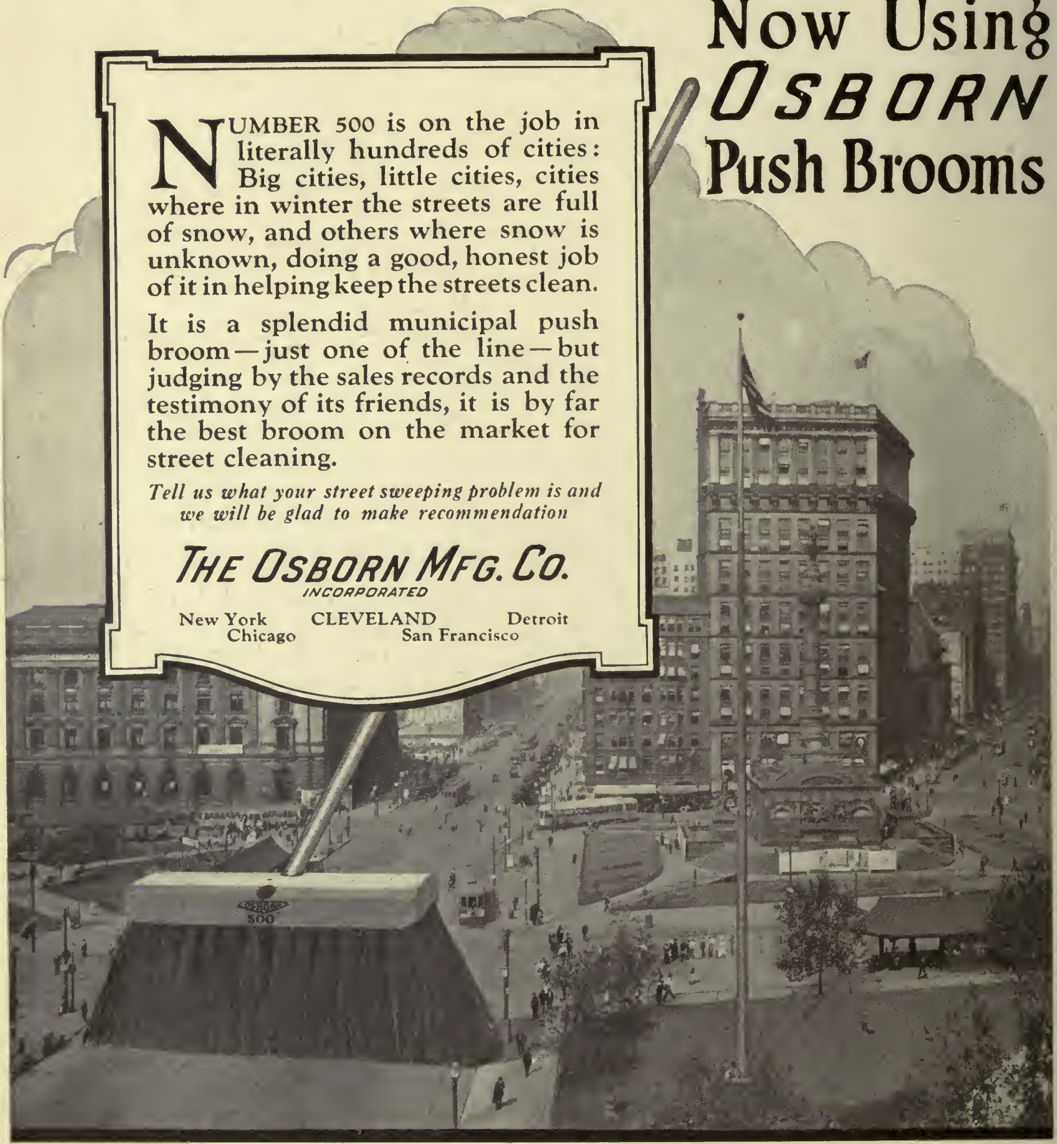
Jacksonville
Atlanta
New Orleans
Memphis

Chicago
Cleveland
Oklahoma City
Dallas

Kansas City
Houston
Minneapolis

MORE THAN FIVE HUNDRED CITIES

Now Using *OSBORN* Push Brooms



NUMBER 500 is on the job in literally hundreds of cities: Big cities, little cities, cities where in winter the streets are full of snow, and others where snow is unknown, doing a good, honest job of it in helping keep the streets clean.

It is a splendid municipal push broom—just one of the line—but judging by the sales records and the testimony of its friends, it is by far the best broom on the market for street cleaning.

Tell us what your street sweeping problem is and we will be glad to make recommendation

THE OSBORN MFG. CO.
INCORPORATED
New York CLEVELAND Detroit
Chicago San Francisco

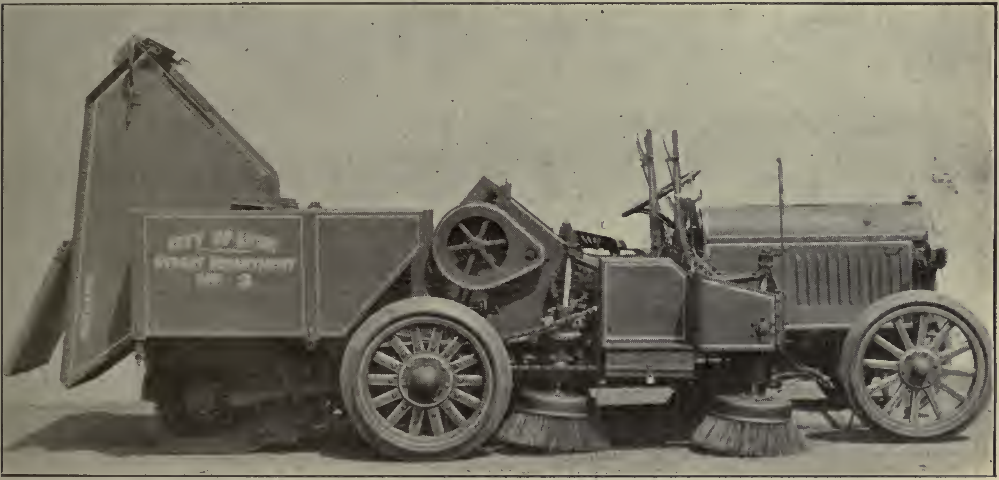
OSBORN

BRUSHES **BROOMS**

LARGEST MANUFACTURERS *of* INDUSTRIAL BRUSHES AND BROOMS

New Pick-up Street Sweeper

The new type of pick-up sweeper with a motor truck mounting has recently been placed on the market by the Springfield Motor Sweeper Company. This sweeper has five disc brushes that sweep the material into a windrow, which enables a 30-foot-wide pick-up broom to deliver the dirt to the elevator belt. Steel brushes are used, which are claimed to be much more durable than the usual type of wood brushes. The manufacturers, the Springfield Motor Sweeper Company, Springfield, Ohio, claim that the narrow broom far outlasts the wider type, and gives more satisfactory service. The manufacturers claim to have spared no expense in the matter of material or workmanship in producing this machine, which they feel will be a successful and satisfactory sweeper.



ROTARY SIDE BROOMS AND A NARROW PICK-UP BROOM ARE FEATURES OF THIS PICK-UP SWEEPER

Wickwire Spencer Steel Corporation Moves to New York

The Wickwire Spencer Steel Corporation, whose general administrative and sales offices have been located in Worcester, Mass., moved these offices to the Liggett Building, 42nd Street and Madison Avenue, New York City, on September 1. The New York office, formerly located in the Equitable Building, 120 Broadway, has been combined with the general offices in the Liggett Building. The Philadelphia warehouse, 237 North 6th Street, will not be affected by this change and will be maintained as formerly to serve the Philadelphia territory, but the Philadelphia sales office has been consolidated with the general offices in the Liggett Building, New York City. The Boston office has been closed, but in order that service to customers adjacent to the New England mills, located at Worcester, Spencer, Palmer and Clinton, may not be interrupted, a divisional sales office has been established at 69 Hammond Street, Worcester, Mass.

A New Model $3\frac{1}{2}$-Ton Truck

The Atterbury Motor Car Company, Buffalo, N. Y., has recently brought out a new model $3\frac{1}{2}$-4-ton truck, especially designed for handling large high-pressure water-mains. The truck, illustrated below, in use by the city of Buffalo, is equipped with a Mead-Morrison capstan just back of the cab. The sides of the body are reinforced with extra heavy stakes to take care of the heavy weight and rolling side-sway of the cylindrical pipe.

The new series of Atterbury trucks which includes this model is claimed to have many refinements in design and assembling which particularly recommend them for municipal use. The motor in each model is of the latest type Continental, with pressure feed lubrication, removable cylinder head, hot spot manifold for complete vaporization, and shaft-driven centrifugal governor. The multiple dry disc clutches insure smooth, positive action and long life, are operated without lubrication or attention, and are unaffected by climatic changes. In the heavier models the transmissions are mounted amidships and have four speeds ahead and one reverse, while in the $1\frac{1}{2}$-ton model the transmission is built as a unit with the motor and has three speeds forward and one reverse. The brakes act directly on drums bolted to the wheels, thus relieving the driving mechanism of all braking strains. The axles, both front and rear, are Timken, with roller bearings throughout. The worm drive is standard on all models and is simple and long-lived. The flexible frame relieves the entire truck of a great percentage of the shocks and strains which ordinarily would be transmitted throughout the chassis to the vital working parts. Bolts are used all through the

Interior Chemical Laboratory, Pittsburgh Testing Laboratory, Pittsburgh, Pa.

A COMPLETE AND ACCURATE INSPECTION SERVICE FOR ALL MUNICIPALITIES—

including

bacteriological examinations or chemical analyses of water for both domestic and industrial purposes, progressive inspection of cast iron and steel pipe, brick, wood block, concrete, and bituminous paving, Bridges, pumping plants and Municipal Buildings. Cement testing a specialty.

All certificates from this company are recognized as authoritative by municipal and state officials.

Complete bulletins on any of the above subjects on request.

PITTSBURGH TESTING LABORATORY

Inspecting Engineers and Chemists.

PITTSBURGH, PENNSYLVANIA

NEW YORK
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RALEIGH
PHILADELPHIA
DETROIT

LITTLE ROCK
BUFFALO
CHICAGO

CINCINNATI
BIRMINGHAM
DALLAS

A 3½-TON TRUCK USED BY THE BUREAU OF WATER, BUFFALO, N. Y.

chassis in place of rivets. The electrical equipment consists of Delco generator, storage battery, two large truck type headlights, and tail lamp, provided without extra cost.

Tractors Help in River Control

Two Holt "Caterpillar" tractors are being used by the Wood Brothers Construction Company to snake trees from bottom-land timber sections to the bank of the Missouri River, where standard current retards are being built for river-bank protection. At Dakota City, Neb., where twenty of these retards are being constructed, a 5-ton 'Caterpillar" tractor drags the trees as they are chopped, through the heavy underbrush to an opening or to a convenient roadway. Here the trees are bunched, loaded on a special two-wheel Lufkin cart and hauled by a 10-ton tractor two or three miles to the river. As fast as the trees are delivered, two construction gangs of seven men each are kept busy with a steam hoisting engine pulling the trees into the river to make the current retards. The tractors work day and night, averaging more than twenty hours out of each day. The largest trees are hauled three to a load. No trimming whatever is allowed, as limbs, branches, leaves and trunk are dragged bodily.

The standard current retard system for bank protection was originated and developed by the Wood Brothers Construction Company, of Lincoln, Neb. This method of checking bank erosion has proved very effective and replaces the older revetments, solid dams, and brush barriers. As a result of the current retard con-

TRACTOR HAULING LOADS OF TREES FOR RIVER-CONTROL WORK

SERVICISE THE CREVICE AND SAVE THE ROAD

SERVICISED
REG. U.S. PAT. OFF. 1916
LOOK FOR IT ON ALL PURCHASES

© 1920

Non-Oozing Expansion Joints

¶ Have the same resilient solid crown to meet the wear of the traffic as other types of solid joint.

¶ The non-oozing quality lies in the body structure which cannot be squeezed out like paste in a tube.

¶ The body compresses and re-expands.

¶ Note the depressions and elevations indicated by the arrows. This joint cannot rise out of the crevice.

¶ Note the solid crown and base indicated by the solid black.

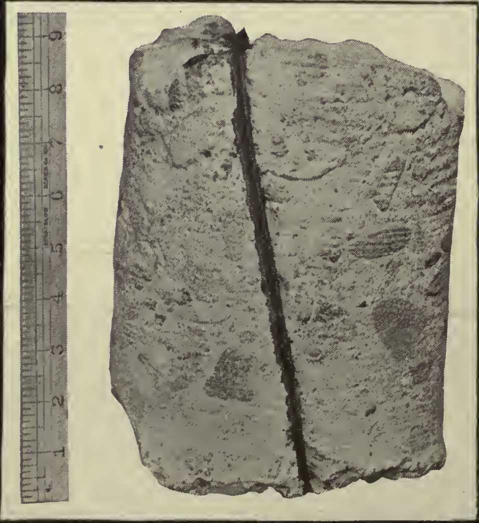
¶ Note the fibrous matted cellular structure between the saturated side walls—a body so constructed will readily take up the expansion which the joint in the illustration below failed to do.

¶ These features are found only in Servicised Joints.

Type of Joint:

AA—Cellular Core Bitumen Jacket.
B —75% Bitumen 25% Compressible Cellular Fibre.
D —Herein described (Self Expanding)
C —Sidewalk Joints.

¶ THERE IS A SERVICISED PRODUCT FOR EVERY PAVING REQUIREMENT.



¶ The contents of the half inch expansion joint to the left has been squeezed out until only the sides remain.

¶ The movement of the slabs during expansion is thus proven to have been more than one quarter of an inch.

¶ The inadvisability and futility of using a solid joint is also proven.

¶ All joints, even though they contain fibrous matter, WHEN IMPREGNATED WITH BITUMEN are solid.

Servicised Products Co.

First National Bank Bld., Chicago.

struction, rivers control themselves and thus save thousands of acres of rich land in Iowa, Nebraska, and Missouri. In making these retards the trees are placed in the stream side by side with the branches down-stream, and are held in position by cables attached to patented Bicknell concrete piles, forming a permanent anchorage. These mats of trees extend out from the bank 150 feet or more and contain anywhere from 500 to 1,500 trees. Behind the mats the river deposits its silt and so forms sand-bars to deflect the current from the banks and prevent caving. As the trees sink, additional trees are placed above those already in the water. As this action goes on, the trees gradually sand themselves in, and with the submerged piles form an immovable mass. The retards are placed at the bend of the river at such angles and intervals as are most needed to drop the most silt and protect the most land.

The Dakota City District is made up of farmers who have banded together to protect their land along the river. This land, which has a water-front of seven miles, is assessed to pay for the work. Over 20,000 trees are being used to complete the retards on this particular job.

Vitrified Clay Sewer Pipe for Storm Sewers

Many cities and towns put off the construction of storm sewers because they do not feel they can stand a large initial payment. The cost, of course, varies in different places because of local conditions. In some instances the sewers can be installed in shallow ditches, and in others they must be placed in deep trenches; sizes also may vary because of weather conditions.

It is almost universally recognized by large cities that storm sewers are inseparable from, and complementary to, all paving improvements. This applies to pavements in both business and residential sections. The question has frequently arisen—just what is a storm sewer worth? Storm sewers in connection with pavements are well worth what they cost, especially when placed in the business section of a municipality. The use of storm sewers eliminates cross-gutters, which are a continual nuisance to vehicular traffic and which in times of continuous rains form a barrier very inconvenient to pedestrians. In eliminating cross-gutters it is possible to have so-called level crossings which eliminate step-downs at the curb and provide a dry passageway for foot traffic at all times. Storm sewers eliminate flooded basements and do away with débris, which is less on paved streets after a storm.

The W. S. Dickey Clay Manufacturing Company, Kansas City, Mo., furnishes No. 2 grade vitrified pipe for many storm sewer jobs. This pipe has the same characteristic qualities as all vitrified salt-glazed clay products. The pressing, drying and burning process is identical. The No. 2 pipe is graded out of No. 1 because of slight defects, which exempt it from being used for the exacting duty of sanitary sewer pipe, but do not disqualify it from permanent and successful service as storm sewer pipe.

INSTALLING VITRIFIED SALT GLAZED SEWER PIPE FOR STORM SEWERS AT CHADRON, NEBR.

KENTUCKY ROCK
Kyrock
ASPHALT

Kentucky Rock Asphalt

Builds highest type asphalt roads and streets at a reasonable cost.

A perfect sheet asphalt mixed by nature.

Laid cold on any good base.

No binder course or curb required.

No heating or mixing plant or skilled asphalt workers necessary.

Laid in one course and opened to traffic immediately after rolling.

Not susceptible to damage from the weather.

Adopted by ten states in standard specifications.

In use on Lincoln, Dixie, Jackson Highways and National Road.

Shipped in open top cars like sand, gravel, or stone.

Write for literature and complete information.

Ask for Booklet D

Kentucky Rock Asphalt Co.
711-718 Marion E. Taylor Bldg. **Louisville, Ky.**

Volume
XXVII
Number 5

The American City Magazine

New York
November
1922

New York State Cities Cooperate on Fuel Problem

TEAM work among the cities of the state of New York has reached a very high degree, as is evidenced by the way they are working out their common fuel problems.

When it became apparent that the country as a whole faced a fuel shortage, the New York State Conference of Mayors and Other City Officials, which for twelve years has been building up a spirit of cooperation among city officials, stepped into the breach. At that time there existed an official Emergency State Fuel Commission. At the request of that body the Conference sent out a preliminary letter of inquiry to all the cities of the state, from which a rough picture of the situation was obtained. It was evident, however, from the replies that a much more careful survey was required, and accordingly a detailed questionnaire was sent out a little later. This asked specific information as to the number of tons of anthracite and bituminous coal on hand and needed by the city offices, police stations, fire houses, hospitals, both public and private, water-works, municipal electric light plants, public schools, sewage disposal plants, municipal baths, municipal libraries, municipal ferries, and other public buildings, institutions or enterprises within the city. The questionnaire further asked information as to how many tons of both anthracite and bituminous coal would be needed month by month from September to March, inclusive.

When these data were received, they were compiled on charts such as are shown on a small scale in the diagram on page 390. With this information tabulated by cities, it became a simple matter to tabulate it for the entire state and to ascertain how far the amount of coal allotted to New York State for public purposes would go toward filling the actual need.

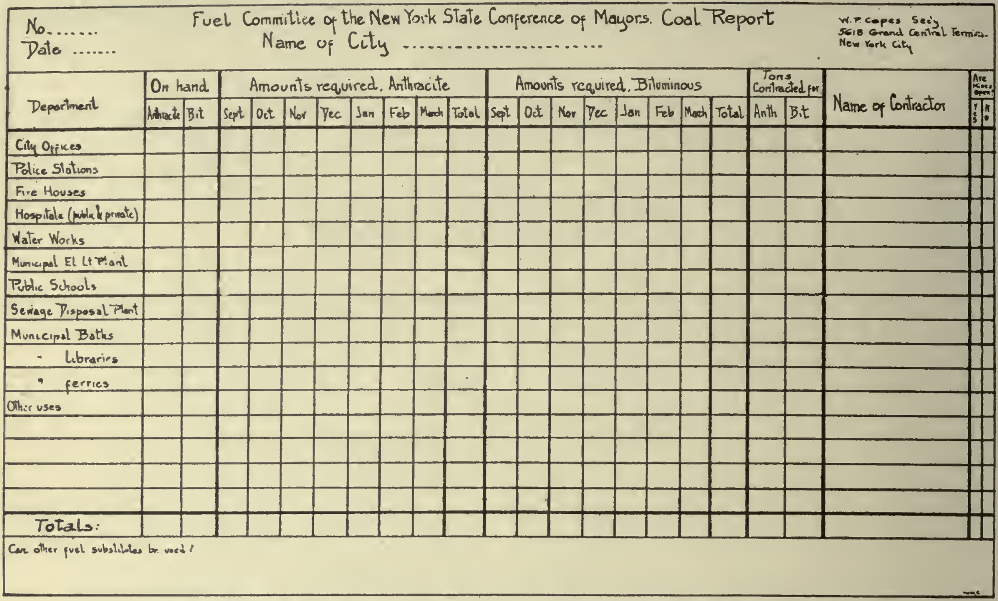
From this survey it has become apparent that the probable supply will not equal the normal anthracite consumption this winter. Fortunately, there is plenty of bituminous coal, and just recently the ban has been lifted on pea coal. The Fuel Committee of the Conference of Mayors, which meanwhile had been invited by the new Fuel Administrator to occupy space in his headquarters, thereupon sent a letter to each of the mayors asking his cooperation in the matter of suspending for the duration of the emergency any local anti-smoke ordinances or any health regulations which might prevent the use of bituminous coal. This was followed by a letter pointing out how, in the particular situation described by the city in its report, a mixture of bituminous and anthracite coal could be employed to eke out the scanty anthracite supply. The accompanying letter to Mayor John H. Walrath of Syracuse is a sample of this type of communication:

October 9, 1922.

Honorable John H. Walrath,
Mayor,
Syracuse, N. Y.

My dear Mayor:

The report you sent to us about the coal supply and needs of your city departments shows that you have on hand only 1,954 tons of anthracite coal and that you will need 13,390 tons; also that you have on hand 238 tons of bituminous coal and will need 3,683 tons.



No.......
Date ....

Fuel Committee of the New York State Conference of Mayors. Coal Report
Name of City ....

W. P. Capes Sec'y
5618 Grand Central Termin.
New York City

Department	On hand		Amounts required, Anthracite								Amounts required, Bituminous								Tons Contracted for		Name of Contractor	Are Mines Open?	
	Anthracite	Bit	Sept	Oct	Nov	Dec	Jan	Feb	March	Total	Sept	Oct	Nov	Dec	Jan	Feb	March	Total	Anth	Bit		Yes	No
City Offices																							
Police Stations																							
Fire Houses																							
Hospitals (public & private)																							
Water Works																							
Municipal El Lt Plant																							
Public Schools																							
Sewage Disposal Plant																							
Municipal Baths																							
" Libraries																							
" Ferries																							
Other uses																							
Totals:																							

Can other fuel substitutes be used?

CARD FORM USED FOR REPORTING THE FUEL SITUATION IN INDIVIDUAL CITIES

You should have no difficulty in obtaining bituminous coal from your regular dealers. We, however, advise you to get your order in immediately, as there is liable to be an acute car shortage very soon.

It will be exceedingly difficult to obtain anthracite coal in any quantities for some time. We therefore urge you to arrange immediately to use bituminous coal in your city buildings and schools as long as the emergency exists. If possible, hold the 1,954 tons of anthracite in your public schools, hospitals and city buildings, and distribute it to essentials (such as hospitals, bakeries, laundries, etc.), which cannot under any conditions burn soft coal. By so doing, you will conserve the small supply of anthracite and help to avert a crisis. Even a mixture of anthracite and bituminous, with as large a percentage of bituminous as you can possibly use, will help out in the present emergency.

If you should have any difficulty in obtaining coal through your local dealers, please advise us and we shall immediately solicit the aid of the State Fuel Administrator and his District Representatives.

Very truly yours,
W. P. Capes,
Secretary, New York State Conference of
Mayors and Other City Officials.

As a result of these letters, but more particularly as a result of the habit of cooperation developed during the last decade, every city responded. In all but one, ordinances and health regulations prohibiting the use of bituminous coal have been temporarily suspended, and all the cities are cooperating in assuring a fair allocation of the available supply.

Officials in other states may be interested in the organization of the fuel administration which has brought this about. At the head is William H. Woodin with his group of technical advisors. Immediately below him is a state committee consisting of one representative each for the utilities, the cities, the retail distributors, and the wholesale distributors. The chairman of this advisory committee is the Assistant Administrator, Harry T. Peters. In each of the nine judicial districts there is a similar district advisory committee, with the district administrator as chairman and one representative each for the utilities, the public bodies, the retail, and the wholesale distributors. Districts 1 and 2, the city of New York and Suffolk County, have been combined, but throughout the others the organization is identical. The result is that the Administrator has not only his technical consultants, but an advisory committee of various interests to meet the various problems which arise, and each of his deputies in the judicial districts is likewise equipped to handle local situations.

Snow Removal by Counties

Tractors, Motor Trucks and Road Machinery Used Extensively

EVEN THE HORSE IS CALLED UPON TO KEEP COUNTY ROADS OPEN IN GRANT COUNTY, WIS.

IN response to inquiries sent to all counties above the snow-line in the United States, interesting replies showing the forces employed, the type of equipment used, the cost, the number of miles of highway kept open and the approximate number of men employed in this type of work were received from slightly over 100 counties. The outstanding point of interest in this survey is the fact that in practically all cases county forces are employed to keep the roads open. The equipment consists in many cases of hand shovels and horse-drawn plows, although the majority of counties employ motor trucks and tractors equipped with plows of one type or another, or make use of the regular types of road graders to pile the snow at the sides.

In Massachusetts the work has been taken over by the State Department of Public Works, which acts with the towns and cities in keeping all essential roads open. In Rhode Island the work is now handled by the state, where up to a year ago all snow removal was handled by the various towns within the state.

The costs of removal vary greatly, depending chiefly upon the extent to which roads are kept open and the intensity of the snowfall within the district. It is interesting to note also that an increasingly large number of roads are kept open during the winter, thus showing the appreciation of highway transport at all times of the year.

10-TON HOLT TRACTOR AND SNOW-PLOW USED BY DELTA COUNTY ROAD COMMISSIONERS, MICHIGAN, TO KEEP ROADS OPEN IN WINTER

VIEW OF THE BACK OF THE SNOW-PLOW USED BY THE DELTA COUNTY ROAD COMMISSIONERS, MICHIGAN, TO OPEN UP A ROAD TO ITS FULL WIDTH

SNOW REMOVAL BY COUNTIES

State and County	Removal Done by	Equipment	Cost 1921-22	Miles Highway Kept Open	Number of Men Employed
COLORADO					
Saguache	County forces	Motor trucks with plows, tractors, graders, etc.	$500	12	....
DELAWARE					
Kent	All highways cleared by state	Trucks with blade scrapers, tractors with blade scrapers	$1,300	200	....
IDAHO					
Benewah	Not practiced except in cases of exceptional drift	By hand	50	....	....
Butte	Not practiced	....	....	....	....
ILLINOIS					
De Kalb	No attempt to remove snow	....	....	....	....
Douglas	No snow removed	....	....	....	....
Lake	County	....	No snow	15	As required
Scott	Not systematically practiced	....	....	....	....
Williamson	No snow removal done	....	....	....	....
INDIANA					
Hendricks	County forces	....	Nothing	400	None
Jackson	Not very much snow for four years	Teams, men, shovels and graders	Nothing	None	None
Jennings	County or township	Seldom necessary to remove snow	....	....	....
Rush	County forces	Motor trucks and V drags	No record	175	....
Vigo	Do not attempt to remove snow	....	....	....	....
IOWA					
Chickasaw	County day labor crew	Motor trucks, Holt tractors and graders	$680	47	4
Dallas	County forces	Tractors and graders	800	70	6 to 8
Des Moines	County forces	Tractor and grader	Nothing	....	....
Dubuque	County forces	Holt tractor with locomotive plow	....	40	....
Fayette	County forces	Team and small grader; heavy drifts only opened for light traffic	....	....	....
Floyd	County forces	Holt tractor, plow and graders	Too much for benefit received	18	2 to 6
Hamilton	No snow removed	....	....	....	....
Humboldt	County forces and extra men	Motor trucks and graders pulled by horses	$200	42	7
Lyon	County forces	Holt tractor and graders	Very light	23	2
Monona	County forces	Holt 5-ton tractor pulling Adams Blade or Duplex Maintainer	$604.50	31	2
Pottawattamie	County patrolmen	Bolton road maintainers and four horses	No record	148	28
Worth	Day labor	Drifts only removed	....	....	....

SNOW REMOVAL BY COUNTIES

State and County	Removal Done by	Equipment	Cost 1921-22	Miles Highway Kept Open	Number of Men Employed
KANSAS					
Clay	No snow removal	....	....	....	....
Finney	County gang	Trucks for transportation of men only	$765	28	10 to 15
Graham	County forces	Hand shoveling	75	100	20
Kingman	County forces	Tractor with graders and snow-plow	2,000	150	50
Osage	County forces	Tractor with Baker plow, teams, trucks with wedge frames	300	207	100 for 1½ days
Riley	County forces	Motor trucks with snow-plows	....	166	8
Shawnee	County forces	Motor trucks with A-frame plows	Incomplete	250	Varies
Wabaunsee	County forces	Two trucks with drags and 25 horse-drawn drags	$500	180	40
KENTUCKY					
Adair	Not enough snow to retard travel	....	....	....	....
Barren	Not removed	....	....	1,200	....
Caldwell	Snow never gets deep	....	....	....	....
Owen	County forces	Motor trucks and graders	Nothing	....	....
MASSACHUSETTS					
Essex	County has no connection with this work	State D. P. W. acts with towns and cities	....	....	....
MICHIGAN					
Branch	County gang	Motor truck equipped with plows	$200	100	10
Delta	County forces	10-ton Holt tractor, 20-foot Levy plow, 5-ton truck with locomotive plow	2,500	50	4 to 6
Dickinson	County forces	Tractors and plows	8,500	75	25
Ionia	County forces	Motor trucks, tractors, graders	50	33	2
Kent	County forces	Motor trucks with scrapers, tractors, graders, snow-plows, motor trucks with plows	394.80	40	100
Macomb	County forces	Motor trucks with plows and graders	1,500	235	6 to 25
Otsego	Not removed	Snow-rollers	....	5	....
Washtenaw	County forces	Motor trucks with snow-plows, graders and 10-ton tractor	....	125	....
MINNESOTA					
Aitkin	Townships remove snow	....	....	....	....
Brown	County forces	Blade graders, teams and men with shovels	242.68	118	Varies
Isanto	County forces	....	200	85	13
Norman	No snow removal undertaken; no funds available	....	....	....	....
Pennington	Only occasional opening of bad drifts	3 motor trucks, small snow-plow, maintenance graders	....	......	....
Swift	No provision made for snow removal	....	....	....	....
MISSOURI					
Callaway	No regular system; mostly donated	Teams and road graders or V-shaped drag	Unknown	25	....
Cole	County forces	....	Nothing	....	....
Johnson	County forces	Motor trucks with graders, Havelock maintainers, drags, and large A-shaped drags	....	....	....
Lincoln	No official attention given to snow removal	....	....	....	....
Livingston	Nature—wind, rain and sunshine	....	....	....	....
MONTANA					
Beaverhead	County	Motor trucks, caterpillars and graders	Unknown, not segregated	....	....
Cascade	County forces	Caterpillar tractor and power grader	$2,050	50	....
Chouteau	County	Occasional drifts shoveled by hand	....	....	....
Granite	Travel does not warrant snow removal	....	....	....	....
Park	County forces	Practically nothing, only occasional drifts shoveled	No record	....	....
Wheatland	Snow occasionally dug out of heavy cuts	....	....	....	....

SNOW REMOVAL BY COUNTIES

State and County	Removal Done by	Equipment	Cost 1921-22	Miles Highway Kept Open	Number of Men Employed
NEBRASKA					
Chase	County forces	Motor truck and graders	$100	49	6
Douglas	Day labor	3 trucks with plows, 2 tractors with graders	....	30	....
Fillmore	County	Motor trucks equipped with graders	No snow	....	....
Jefferson	County maintenance crews	Motor trucks, tractors and graders	Not segregated	30	4
Otoe	County forces	6 FWD trucks, 2 Holt tractors with snow-plows	....	62	8
Thayer	County forces and hire	Trucks, blades and tractors	Nothing	....	None
Webster	No snow removal	....	....	....	....
NEVADA					
Humboldt	County forces and private accounts	Snow-plows and other home-made methods	No record	250-300	No record
NEW JERSEY					
Salem	County forces	Scrapers	$2,000	100	....
Union	County forces, contract and State Highway Department	Motor trucks equipped with plows	....	....	....
NEW YORK					
Delaware	Towns	Graders	....	....	....
Madison	Town forces	Motor trucks and horse-drawn plows	$500	1,422	....
Oswego	Town forces	Horse-drawn snow-plows and snow-rollers	$29,149.18	700	50 to 300
St. Lawrence	Town forces	....	....	....	....
Schenectady	Town forces	Motor trucks and tractors equipped with plows and graders	Unavailable	25	....
Schoharie	Townships	Motor truck, Lynn tractors	....	50	....
Tompkins	No snow removal by county	....	....	....	....
Washington	Town forces	....	....	1,500	....
NORTH DAKOTA					
Bottineau	None	....	....	....	....
Bowman	Individual	....	....	....	....
Morton	County—day labor	Tractors, graders, fresnos, etc	....	....	....
Williams	No snow removed	....	......	....	....
OHIO					
Allen	Not removed very often	....	....	....	....
Ashland	County forces	5-ton White truck and snow-plow	$600	30	3
Clinton	County and township forces	None	....	....	....
Darke	County and township forces	None	Very small	....	....
Fairfield	Township	....	....	....	....
Hardin	Township	None	....	All	None
Lake	County	2 trucks with plows	$420	60	8
Madison	Township forces	Drags	No snow	....	....
Ottawa	Township	Tractors and graders	Nothing	....	....
Ross	Very little snow removed	Wooden drag drawn by team	Very little	10	2 or 3
Seneca	Township	....	Nothing	1,280	None
Trumbull	County forces	Motor trucks equipped with plows and graders	$255	80	20
Washington	Nature	Sunshine and rain	....	....	....
Wyandot	Township—day labor	Wooden snow-plows and graders	Nothing	All	None
PENNSYLVANIA					
Centre	State	Plows and graders	....	....	....
Chester	State	2 Nash Quad trucks with snow-plow attached	$8,000	120	400
Crawford	Township or state	....	....	....	....
Monroe	State forces	Motor trucks equipped with plows	....	30	....
Sullivan	Township on all except state highways	By hand	....	....	....
RHODE ISLAND					
....	No county highway organizations. State roads kept open by state maintenance forces. Motor trucks with plows, tractors with plows, road scrapers and graders		$13,300	360	150
WISCONSIN					
Adams	No snow removed by Co.	....	....	....	....
Ashland	County forces and Northwestern Transportation Co.	10-ton Holt tractor and snow-plow	700	60	10
Columbia	No snow removed	....	......	....	....
Grant	Townships	....	....	....	....

Erie Has Model Municipal Piggery

By George F. Paul

THE city of Erie, Pa., prides itself on having what is declared by experts to be one of the finest municipal piggeries in America. At present the 1,400 hogs are consuming from 30 to 35 tons of garbage per day. Those in charge have been able to fatten hogs for market in from four to four and one-half months. This fattening is carried on without the annoyance of a disagreeable odor, or any other nuisance. The hogs that have been marketed have withstood a more severe physical test, and have shown much less disease, than the hogs raised by the ordinary farmer.

A SCENE AT THE GARBAGE DISPOSAL PLANT, ERIE, PA.

The hogs are all treated with a serum to render them immune to cholera before they are placed on feed. Not a single hog has been lost from cholera at this piggery. The very nature of the feed in a garbage-feeding plant is conducive to cholera, and hogs not so treated would not live in such plants. The inoculations render the hogs immune, to the extent of warding off the disease which might be produced by such feed, and by feeding on food of this nature they are daily setting up additional immunity, so that it is estimated that by the end of 60 days on such feed the hogs are rendered from 90 to 95 per cent immune to cholera, even when subjected to the most severe exposure. Not only are the hogs rendered free from cholera, but they are also treated against swine plague and other diseases. The death loss from all causes is a fraction less than 2 per cent.

Pigs Replace Incinerator

In 1913 an incinerator was built to take care of the city's garbage, but it cost so much to operate it that the piggery was built, and the pigs were bought, and put to work. This modern hog-house is 360 feet long and 50 feet wide, with walls of concrete block. It is divided into pens, each pen affording room for 125 pigs. The pens are bedded with baled shavings, which keeps the hogs clean and dry at all times. The sleeping quarters are kept entirely separate from the feeding platforms, which are immediately in front of the sleeping quarters. These platforms are of concrete and are flushed daily to keep the pens in a clean and sanitary condition. Bucket conveyors bring the garbage to the feeding platforms. The pigs are turned into the pens and allowed to eat at will. They are then driven into their sleeping quarters, and the feeding floors are thoroughly cleaned.

The hogs are put on garbage feed very carefully for the first ten days after arrival, only being permitted to consume a small quantity of garbage until they have become accustomed to their feed. No grain is fed at any period during the hogs' stay at the ranch, which ranges from four to five months.

Every means has been used to erect a model pig farm. Both county and state officials have visited the farm and know that the pens are of the most sanitary type and can be kept clean at all times. Plenty of fresh air and light help to keep the piggery sanitary. In this respect it is absolutely different from the pig-pen of the old-fashioned type.

The proposition is declared to be a successful and profitable one.

Special Assessments for Local Improvements

By A. L. H. Street

THE existence of general power in a state to authorize its cities, towns and villages to construct local improvements at the expense of property benefited thereby has long since ceased to be a debatable legal proposition. And, although the law reports continue to be augmented in volume by court opinions dealing with the validity of particular assessments, the limitations existing upon this general power are probably as well defined by judicial authority as may be expected in the face of a flood of statutory amendments which subsides only when all the legislatures of the several states happen to be in a state of adjournment.

Frequently it has been decided by courts of last resort that municipalities have no inherent power to levy assessments for betterments. The power must be expressly conferred by authority from the state, and the state itself is limited in the power which it may delegate. As pointed out by the Massachusetts Supreme Judicial Court in White vs. Gove, 183 Mass. 333, and decisions of the courts of Arkansas, Michigan, New Jersey, Ohio, Oklahoma, Pennsylvania, Texas, and other states, there is a constitutional bar to the levy of assessments exceeding improvement benefits derived by the assessed property.

The nature of an improvement that will constitute it "local" in such sense as to authorize a special assessment on benefited property has been the subject of many lawsuits. The test generally applied is that of special benefit. And, according to the holding of the Missouri Supreme Court in Kansas City vs. Railroad Company, 230 Mo. 369, the benefit must accrue from the present plan of improvement adopted, without reference to prospective benefits to accrue from a general plan not yet adopted.

Summarizing various decisions of state appellate courts, a standard legal authority says, concerning assessments on account of street improvements:

> "Authority to pave the roadway or to construct gutters is not to be implied from power to improve sidewalks. Planting shade trees and boulevarding a street may be deemed an improvement thereof within the meaning of the statute [citing Heller vs. Garden City, 58 Kansas Supreme Court Reports, 263, and Downing vs. Des Moines, 124 Iowa Supreme Court Reports, 289]. The term 'pave' has been held to include macadamizing a street or flagging it, and constructing gutters. . . . But under a power to pave, a city may not levy an assessment for a change of grade, unless such change is a mere incident of the paving [citing decisions of the courts of Ohio, Wisconsin and Washington]." 28 Cyc. 1109-1110.

Under appropriate charter or statutory authority, assessments for special benefits derived from lighting improvements have been upheld. See decision of Illinois Supreme Court (129 N. E. 580), of New York

Supreme Court (142 N. Y. Supp. 523), and of Washington Supreme Court (159 Pac. 806). But a decision of the Indiana Supreme Court (111 N. E. 926) reminds us that there must be express authority for apportioning costs by special assessment—that authority to assess for lamp-posts will not justify an assessment for the cost of a distributing system.

Under a decision of the Maryland Court of Appeals (61 Md. 224), which is supported by holdings of courts in other states, the cost of paving a street intersection may properly be included in assessing the entire cost of a street improvement, where there is no charter or statutory requirement for the bearing of this expense by the city.

Numerous decisions uphold the right of a city to levy assessments for street repairs under general power to improve streets and levy special assessments therefor.

As to sewers, it has been decided by a Pennsylvania court that the fact that certain property is served by a private sewer will not exempt the property from assessment for the construction of a public sewer system. (In re Broad St., 9 Kulp Reports, 37.) My impression is that there is a decision to the same effect in one of the early volumes of the Kansas Supreme Court Reports. In a comparatively recent case (129 N. E. 71), the Illinois Supreme Court decided that the cost of a station to pump sewage was a proper item to be apportioned by special assessment for a sewer improvement, and in another recent decision (223 S. W. 615) the Missouri Supreme Court ruled that all property within a sewer district may be assessed on account of the expense of all laterals required therein. But all of the decisions require to be borne in mind the fundamental principle that there must be a reasonable relationship between individual benefits and corresponding assessments.

The general principle applicable to all assessments for city betterments, drawing a distinction between improvements which benefit the public at large and those which create special benefits in addition to public ones, is applied to the construction of waterworks and mains. There appears to be no judicial dissent from the proposition that assessments may be levied to cover special benefits derived through construction of a water-main along a given street, or through connections constructed for lots. But, in so far as a water-works system serves all of the inhabitants generally, it cannot be regarded as such local improvement as will support special assessments.

There is a conflict of decisions concerning the right to levy assessments for street sweeping and sprinkling. See 28 Cyc. 1110.

The right to assess for park improvements conferring special benefits, under conferred authority, has been recognized in several authoritative decisions.

The general rule laid down by the courts is that it is the actual benefit to the property that controls the right to assess. If such benefit accrues, it is quite beside the point that, because the owner presently uses the land for agricultural purposes or some other special use, or does not use it at all, there is no benefit from the standpoint of present use of the property.

Exemption of property of cemeteries, schools, religious corporations, charitable institutions, and other similar organizations, depends upon statutory or constitutional provision to that effect, or upon lack of benefits. It is generally held that an exemption of such property from "taxation" is insufficient to exempt from special assessments for local improvements.

No express exemption is required to exempt from assessment, although benefited, the property of the United States, or of the state. A conflict of decision exists on the point as to whether property of a county or school district is exempt in the absence of special statutory exemption. (See 28 Cyc. 1117.)

Irregularities in council proceedings account for a large volume of litigation over special assessments. As decided in numerous cases, a substantial departure from charter or statutory authority will invalidate an assessment against property where the owner makes timely objection. But assessments will not be disturbed on purely technical grounds. Illustrations are afforded of vital irregularities in cases where a statutory requirement for initiation of a local improvement proceeding by petition of property owners is not observed (59 California Supreme Court Reports, 206), or where there is an omission of a preliminary estimate of the cost, required by statute (5 Minnesota Reports, 95) or where a required resolution of necessity is not preliminarily adopted by the city council (28 Cyc. 1135). Fatal irregularities have also occurred in municipal experience in failing to observe statutory and charter requirements designed to secure construction of public improvements by lowest responsible bidders.

Authority granted to levy special assessments is usually coupled with specific provisions for due notice to all interested parties of hearings at various stages of the proceedings, with full opportunity to such parties to be heard on any objections, with a right to review in the courts. There is, also, special provision limiting the time within which attack may be made upon the proceedings. Taken together, the statutes therefore harmonize the right of the property owner to be heard on objections to irregular proceedings, excessive assessments, etc., with the practical necessity for timely objection.

The courts of Colorado, New Jersey, New York, North Carolina, Oregon, Vermont, and other states, have firmly established the rule that a court in reviewing an assessment proceeding is powerless to substitute its opinion for the judgment of municipal authorities concerning the necessity for, or reasonableness of, an improvement ordered, excepting where such authorities manifestly have abused the discretionary powers vested in them.

In Iowa, Kansas, Maryland, Massachusetts, Ohio, and Wisconsin, and in other states, it has been decided by the supreme courts that invalidity of an ordinance under which an improvement has been ordered, or other irregularities invalidating a local assessment originally made, do not preclude the making of a reassessment under new proceedings regularly had. Statutes providing for reassessments in such cases generally exist in the several states and have been upheld by the courts as against constitutional objections. Thus means are afforded for levying an equitable assessment for an improvement already constructed, despite the void character of the original assessment.

Public Health Administration in Asbury Park, New Jersey

By B. H. Obert
Health Officer, Asbury Park, N. J.

THE city of Asbury Park is located on the New Jersey shore of the Atlantic Ocean, 50 miles south of the city of New York and 78 miles from Philadelphia. According to the United States Census Bureau, its estimated population as of July 1, 1922, is 12,966, increasing during the summer season to a minimum population of 75,000 and a maximum population of 100,000.

Early in its history Asbury Park awakened to its responsibility, as a resort center, of protecting the people sojourning there, and emphasized the importance of public health work. In 1880, the first Board of Health was established, and since that time Asbury Park has been one of the leading cities in the state of New Jersey in its public health administration. The city is governed by a Board of Commissioners, which constitutes the Board of Health. The Bureau of Health is operated under the Director of Public Safety. The staff includes a full-time health officer, a clerk, a sanitary inspector, a special inspector, and a part-time physician. A public-school nurse is employed by the Board of Education, who cooperates with the Bureau of Health.

The operation of the department is divided as follows: communicable diseases; enforcement of sanitary laws; child welfare; foods; hygiene and sanitation; vital statistics; laboratory; education and publicity; garbage, rubbish, dead animals and stable manure; plumbing; and public platform scales. In the effort to prevent the spread of communicable diseases, we try to locate the source of infection and to take such measures as are known to be effective to prevent their spread. A separate card record is kept of each case reported to the department. In cooperation with the Board of Education, all children attending the public schools are required to be successfully vaccinated upon entering school, or to produce from a physician a certificate that they have been successfully vaccinated within five years, and to be revaccinated at the end of each five years. Each year free vaccination is offered to all children and adults. The Bureau of Health furnishes for indigent cases vaccination against smallpox and typhoid fever; also the Schick test and immunization against diphtheria. The Schick test and immunization against diphtheria is being recommended and urged for all children attending the public schools. Diphtheria antitoxin is provided upon request.

The city owns a municipal hospital equipment consisting of fire-proof buildings, modern and up-to-date in every respect, for persons suffering from scarlet fever, diphtheria, and smallpox. Only one death has occurred from typhoid fever in Asbury Park since 1913; one death from scarlet fever since 1911; eight deaths from diphtheria in the past ten years; and not one death from malaria has occurred in the past ten years, owing to the fact that Asbury Park is free from mosquitoes.

Accurate Computation of Infant Mortality Rate

The infant mortality rate, under one year, per 1,000 reported births for year 1921, was 48.5. This rate is as near a true rate as we are able to get and includes all births of babies that have occurred outside of Asbury Park whose mothers are residents of the city, and also all deaths of resident babies who have died outside of the city. The total resident death rate for Asbury Park for the year 1921 was 13.4 per 1,000. The State Bureau of Vital Statistics assists us in obtaining these records.

Milk and Food Inspection

Strict supervision is maintained over the milk supply for the city by inspection of dairies, of the method of transportation and of the plants in the city, and by frequent analyses of samples. About 95 per cent of all milk consumed in the city is pasteurized in thoroughly up-to-date plants, licensed and supervised by the State Department of Health and also supervised by the local department. Inspections are made of foods in warehouses and stores, and those served at hotels, boarding-houses and restaurants. At all soda fountains and places where soft drinks are dispensed, it is required by ordinance that beverages be served in individual containers, used but once, or in glasses which have been sterilized at least five minutes by submersion in boiling water, or have been exposed to live steam in a suitable sterilizer.

Water-Supply and Sewerage

Every residence property in the city is connected with the public sewerage system. There is not a vault, cesspool, or shallow well for domestic purposes in the city. The water-supply is obtained from artesian wells, varying in depth from 800 to 1,200 feet, owned and operated by the city. Approximately one-third of the city, which is a residence section, is served by a private water company. This supply of water averages 35 per cent surface and 65 per cent artesian from wells about 1,000 feet in depth. A separate record with diagram is kept of each property. Loose-leaf books, one for each street, are used for this purpose.

Collection and Removal of Wastes

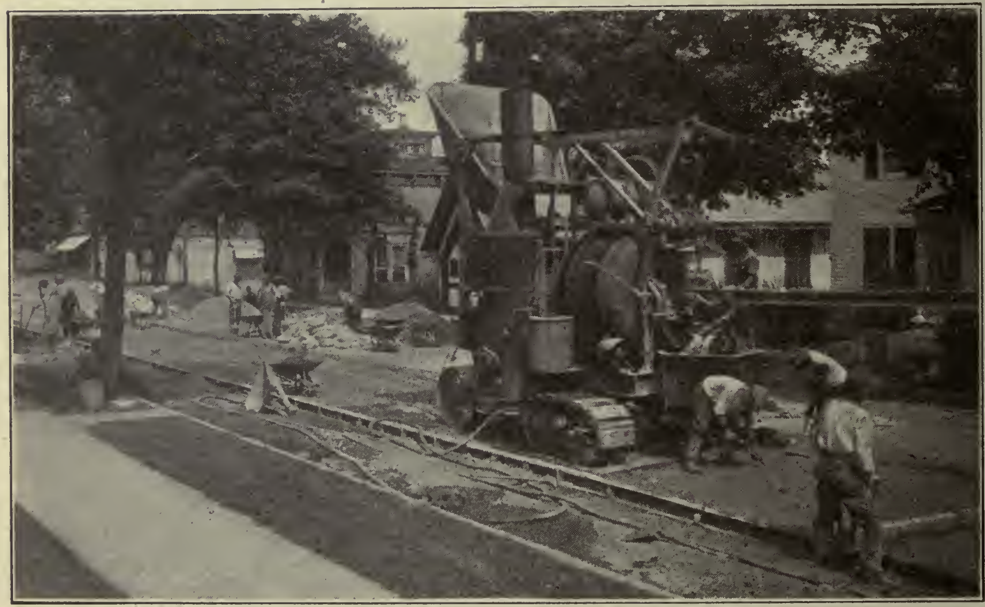
The collection, removal and disposal of garbage, rubbish, dead animals, stable manure and ashes is performed by contract, the supervision of which is under the Bureau of Health, with the exception of ashes, which is under the Departments of Streets and Police. Three collections of garbage a week, throughout the city, are made from October 1 to June 1, and six collections a week from June 1 to October 1, excepting in the hotel and business districts, where six collections are made per week throughout the year. All these materials are collected from the places where stored on the property. No garbage or rubbish is placed on the street curb. Garbage is disposed of by feeding to hogs, and the rubbish is first culled and the residue used for filling low lands. A place for the disposal of these waste materials is provided by the contractor. Dead animals are removed daily upon notice, and ashes are removed once a week from the street curb.

Progress vs. Patchwork---Economy in Small-Town Street Construction

Proper Choice of Pavement and Intelligent Financing Make Large Economies Possible in South Nyack, N. Y.

By J. J. Dobbin
Village Clerk, South Nyack, N. Y.

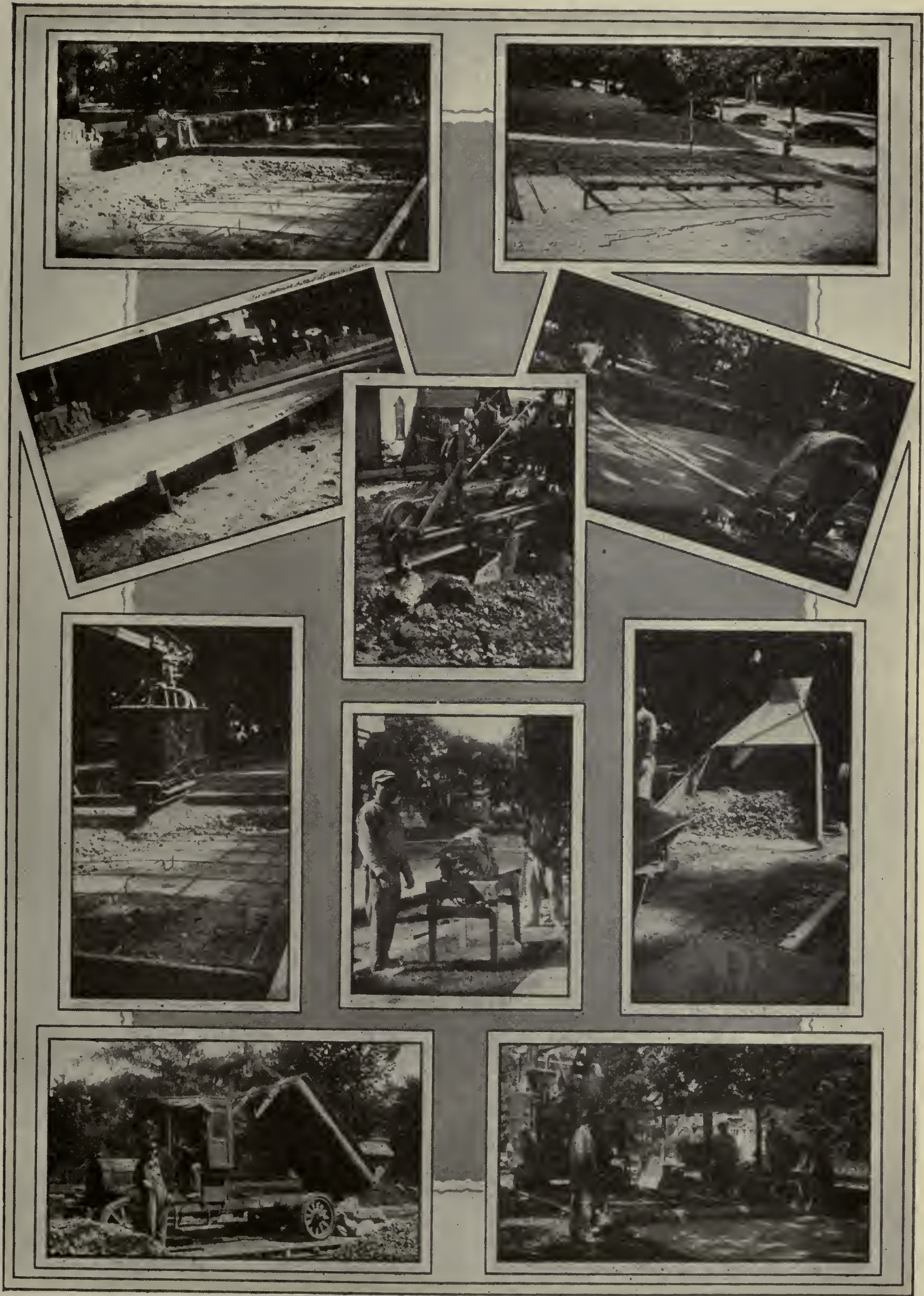
NOT infrequently a small town or village is paying relatively large sums annually for the up-keep of its main streets which are heavily traveled by trucks, automobiles and other vehicles, many of which do not stop within the corporate limits. This type of traffic wears out the macadam or other cheap roads and forces exceedingly high maintenance charges on the community.



PAVER NEARING COMPLETION OF SECOND HALF OF CONCRETE ROAD
The half of the pavement completed first was used for the storage of aggregate and cement, as a satisfactory detour was available

An interesting example of the way in which a village of about 1,800 population, with an assessed valuation of $2,100,000, is increasing its bonded indebtedness and making possible a decrease in taxes at the same time, is found in South Nyack, N. Y. On March 21, 1922, the taxpayers authorized the expenditure of $46,000 for the construction of a reinforced concrete roadway on a portion of South Broadway and Piermont Avenue, which form part of the main thoroughfare on the west side of the Hudson River which passes through the village for about one mile. This road is built 24 feet wide for most of its length and 18 feet wide for the remainder, where its width is limited by present property boundaries.

The estimated cost of the new road is about $45,000, and for additional paving in connection with a state highway, which will also go through a portion of the village, $5,000 was voted, making a total of $50,000. To provide for this bond issue of $50,000, 25-year 5 per cent serial bonds were sold



CONSTRUCTION PICTURES OF SOUTH NYACK'S NEW CONCRETE STREET

At left, top to bottom, pre-bent reinforcing mat in place; road finished to top of forms; dumping a batch; delivering cement on the job. At right, top to bottom, frame for building up reinforcing mat; applying belt-finish to road; the mixer skip; screeding the surface of pavement. Center, upper, excavator preparing subgrade; lower, baling empty cement sacks on June 5 at 100.667. The village is to pay $2,000 annually on the principal of the bonds together with $2,500 interest on $50,000 for the first year, making a total first year payment of $4,500, the interest, of course, decreasing each year. There will be little, if any, maintenance cost on the main highway and none on that portion which will be constructed in conjunction with the state highway, as the state maintains its roads perpetually.

For some years South Nyack has been paying off sewer bonds at an annual rate of $2,000. The last of these sewer bonds was paid off in 1921, and therefore the average yearly payment on the village bond account in excess of the amount paid heretofore will be only $1,250 after the year 1923. The sum of $1,250 would increase the tax rate 6¼ points, or would increase taxes 61½ cents on each $1,000 of assessed valuation, providing it was decided to actually increase the taxes to take care of this bond account. This will probably not be necessary, as the expenses in maintaining the two roads which are to be paved has amounted to over $4,000 annually for the last four or five years. This amount released would take care of the new bond account, or if the tax rate were raised as stated above, this $4,000 would be released for the improvement of other streets.

On May 22, after advertising for bids, the road job was let to the Cornelius Vanderbilt Contracting Company, New Brighton, Staten Island, N. Y., for the sum of $40,092.50, plus extras. Work was begun about June 1. The contract called for the construction of a reinforced concrete pavement 7 inches thick, for a distance of 3,000 feet on South Broadway, and 445 feet on Cornelison Avenue, to a width of 24 feet, and for the construction of a pavement 18 feet wide and 7 inches thick for 1,315 feet on Piermont Avenue.

Preparing the Subgrade

The first work undertaken by the contractor was the excavation of the old bituminous macadam pavement on Cornelison Avenue and South Broadway, using a Keystone excavator. This work progressed very slowly because of the excessive rainfall during the latter part of June and July, which not only added to the weight of the material excavated, but caused considerable trouble with the miring of the wagons. The 10-ton Buffalo-Springfield road roller which was first used to break up the pavement with its scarifier attachment and which also drew the rooter plows for breaking up the pavement, came in very handy in hauling out some of the mired wagons. The excavator was also used to push out some of the wagons that were mired close to it. In the southerly section of South Broadway, about one block was very carefully underdrained, as this had always been a wet spot. Six-inch agricultural tile were laid about 2 feet below the grade of the finished subgrade, and covered with crushed stone. At street intersections concrete catch-basins have been constructed, connected by precast concrete butt joint pipe.

In the preparation of the subgrade a large number of boulders were removed, as well as many one-man stones. After the completion of the drain the subgrade was shaped by hand and rolled with the 10-ton roller.

Constructing the Pavement

The construction of the concrete pavement was handled in two strips. A strip 12 feet wide was built first from the corner of Piermont and Cornelison Avenues to the northern end of the job; the Blaw-Knox road forms were set well in advance of the Koehring 14-E steam-operated paver, and crushed stone and sand were dumped on the other section of the subgrade. This left ample space for the delivery of cement and for the operation of the laborers who used wheelbarrows in feeding the mixer.

The pavement is reinforced with ¼-inch Havemeyer factory-bent steel bars, at the rate of 65 pounds to 100 square feet of pavement. The reinforcing is bent so as to hold it at the proper elevation from the subgrade. The 12- by 12-foot reinforcing mats are assembled on the job. This form of reinforcement has been used with great success by the Delaware State Highway Department, well known for its concrete road construction.

Elastite, a pre-molded transverse expansion joint, is used about every 24 feet at right angles to the center line and perpendicular to the surface of the pavement. The joints are ½-inch in width, and are held by placing them against the wooden bulkhead and dropping the concrete in front of them. After the concrete has hardened on both sides of the joints, it is pared off even with the surface of the pavement.

A 1:1½:3 mix of concrete is being used, the specifications calling for a medium dry mixture tending to produce a uniform, dense and impervious concrete. As soon as the section covering one reinforcing mat is completed, a heavy screed about 6 inches in width is used, operated by two men, for consolidating and contracting the concrete. After the concrete has been struck off with the screed and sufficient time has elapsed so that no displacement occurs, the pavement is rolled with a Macon roller, the property of the contractor. This roller is slightly over 6 feet in length, and 8 inches in diameter, and weighs a little more than 10 pounds per foot of length. The pavement is rolled continuously from side to side, each successive passage of the roller overlapping. After the rolling has been completed, the pavement is immediately belt-finished with an 8-inch belt. A 12-inch stroke is used, each stroke overlapping the previous one. The outside edges of the pavement are rounded to a ¼-inch radius with an edging tool. When the pavement had taken its initial set, it was surface marked with a street broom drawn from one side of the pavement to the other. After the final set had taken place, the concrete was covered with a thin layer of soil to retain the moisture.

The first section of the concrete pavement was opened to traffic about twenty days after it was laid. Thus a most dependable roadway replaced the old bituminous macadam, which was a series of pot-holes, making riding uncomfortable.

Bituminous Macadam Shoulders

On either side of the concrete pavement is a bituminous macadam strip varying from 2 to 4 feet in width, extending from the edge of the concrete road to the granite curb or paving brick gutter. The bituminous macadam shoulder is made up of a layer of crushed stone passing a 2¼-inch ring and retained on a 1¼-inch ring, spread to a finished depth of 3 inches for the wearing course, which is placed on a 6-inch base. The surface is bound with Tarvia X heated to a temperature of about 200 degrees and spread over the dry surface at the rate of 1½ gallons per square yard. On this, ¾-inch crushed stone without dust was spread to fill all the voids, and then rolled thoroughly firm. The shoulders were then swept free of stone not held by the binder, and not less than .06 of a gallon of Tarvia X was spread to the square yard, and covered with stone screenings rolled to a smooth surface. A sufficient amount of screenings was left on the surface to protect it while setting up. Following this, the road was opened to traffic, and after completion of the penetration, 0.3 of a gallon of Tarvia B to the square yard was spread over the shoulder. A blotter of clean, coarse sand was spread after the application of the final binder.

C. T. Allison, Engineer of Rockland County, N. Y., was the engineer for the village, and Cornelius Vanderbilt, Jr., was superintendent of the job for the contractor.

Did You Ever Stop to Think—

That the city that gets the publicity gets the business.

That the city that gets the advertising grows.

That advertising a city is a business, not child's play.

That people will go miles to get to a good live city to trade.

That your property will increase in value when the outside world knows your city is wide-awake.

That people from neighboring cities will come where there is something doing.

That the city which does not seek something better than it now has is going to lose out.

That now is the time your city and business need advertising more than ever before.

That if you don't get out and go after the trade, some neighboring city will.

That if they do, they will get the business you should get.

—*Norton Telegram.*

Developing the Beauty of a Small City

BOULEVARD CONSTRUCTION ON RESIDENTIAL STREET IN IOWA CITY, IOWA
Residence property situated on such a street is greatly increased in value as compared to property on streets paved from curb to curb

THE MUNICIPAL OUTDOOR THEATER IN IOWA CITY
An open-air theater in a city park requires almost no formal treatment. Practically every park affords a nook for the staging of a Greek play, a community frolic, or a pageant

Remarkable Progress Made on Chicago Plan

THE twelfth annual report for 1921 of the Chicago Plan Commission is a record of continued progress. Twelve major parts of the Plan of Chicago are now under way and in various stages of completion.

In the Plan, the foundation of the street circulatory system is a quadrangle of wide streets around the "loop" district, composed of Michigan Avenue on the east, Roosevelt Road on the south, Canal Street on the west, and South Water Street on the north. During 1921 the Michigan Avenue, Roosevelt Road, and Canal Street widenings made progress, and a large amount of necessary preliminary work in connection with the South Water Street project was accomplished.

The Plan of Chicago also proposes the creation of great traffic arteries extending as major streets north-and-south and east-and-west through the city from city limits to city limits. Three of these streets on the West Side—Western Avenue, Robey Street and Ashland Avenue, all north-and-south thoroughfares—progressed to the point of having court petitions for their opening, widening and extension filed in the courts during the last year. Construction was started on another, Ogden Avenue, which to-day is a great diagonal thoroughfare extending two-thirds across Chicago in a northeasterly direction from the western city limits to Union Park. Buildings are now being torn down to continue this street, 108 feet wide, for the three-mile distance from Union Park on the West Side to Lincoln Park at Lake Michigan on the North Side.

Court petitions were also filed on five other street widenings in the district just west of the loop, extending from the Chicago River west to Halsted Street, and from Harrison Street south to Roosevelt Road. In this area, Clinton, Desplaines, Jefferson, Polk and Taylor Streets are to be widened from 40 feet to 80 feet, in order to allow the district to develop into a first-class warehouse and commercial section.

The proposed harbors in Lake Calumet and along the shore of Lake Michigan at the Illinois-Indiana State Line, came a step nearer reality with the passage of an ordinance by the Chicago City Council providing for the creation of an industrial harbor in Lake Calumet, and the passage of legislation by the State Legislatures of Illinois and Indiana providing for a harbor commission to establish and operate the proposed "Illiana" transfer harbor at the state line.

The Forest Preserve Commissioners

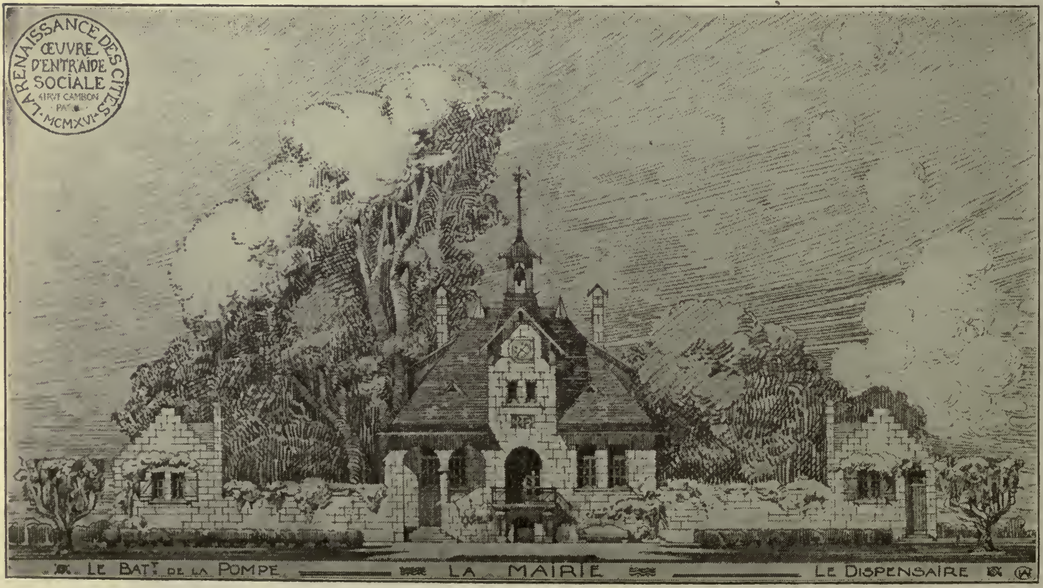
FIELD MUSEUM, NOW COMPLETED, AND THE NEW ILLINOIS CENTRAL TERMINAL AND STADIUM NOW UNDER CONSTRUCTION, CHICAGO acquired 3,487 acres during 1921, bringing the present total up to 21,516 acres; and a start was made upon the project of establishing a zoo in the forest preserves near Riverside, along the Desplaines River, ten or twelve miles west of Chicago. The County Board continued developing good roads, connecting Chicago with the preserves and with surrounding suburban villages, and connecting the various preserves.

Good progress was made in carrying on the lake front park development, and piling was driven in the shallow water along the shore of Lake Michigan to start the creation of what will ultimately be 1,138 acres of park lands, extending for five miles from Grant Park in the center of the city to Jackson Park on the south side. Necessary preliminaries in connection with the extension of Grand Boulevard northward by means of widening South Park Avenue to 198 feet were successfully conducted. In the Plan of Chicago it is proposed to establish a connection between the north and the south side boulevard and park systems by constructing a bridge across the mouth of the Chicago River, connecting Grant Park with the Municipal Pier, Lake Shore Drive and Lincoln Park.

The Illinois Central Railroad Company started initial technical work looking to the electrification of its facilities and the construction of its new depot fronting upon Grant Park at Roosevelt Road, the southern boundary of the traffic quadrangle encircling the heart of the city. The total estimated cost of this terminal improvement is $88,000,000. On Canal Street, the western boundary of the quadrangle, the Union Station group of roads is remodeling its facilities and erecting its new depot, at an estimated cost of $75,000,000.

Other miscellaneous activities carried forward last year by the Chicago Plan Commission, of which Charles H. Wacker is Chairman, included a study of the Pershing Road improvement, an important east-and-west thoroughfare four miles south of the loop; the suggestion of changes that will save the city of Chicago $2,000,000 in connection with the new Cicero Avenue bridge across the Sanitary Canal, six miles west of the loop; the Indiana Avenue widening, creating a new entrance into the loop from the south; the 22nd Street widening, an important east-and-west traffic artery two miles south of the loop; and other projects; as well as full cooperation with the Chicago Zoning Commission; the delivering of forty illustrated Chicago Plan lectures; and the distribution of more than a quarter-million pieces of Chicago Plan literature.

SKETCH FOR A CITY HALL TYPICAL OF THE NEWER TYPE OF FRENCH DEVELOPMENT, USED BY THE FRENCH IN REBUILDING THE DEVASTATED AREAS



Research and the Increased Functions of City Government

By Lent D. Upson

Director, Detroit Bureau of Governmental Research, Inc.

THE former mayor of one of America's largest cities was protesting certain proposed expenditures for public purposes. He said: "I belong to the period of economy in government, sanity in public expenditures, prudence in city adventures, and safety for the home, industry, and the future prosperity of the city." There was such a time in every great community, when city activities were few, operating expenses were low, and the public debt was small.

Such a time for Detroit may have been in 1874, when the city closed its first half-century as a corporation. In that year, the then city of 100,000 people collected a million dollars in taxes for the conduct of 33 public activities. There were no telephones, auto trucks, germ theories of disease, psychopathic clinics, aviation fields, sewage disposal plants, safety engineers, platoon schools and streets with 12-inch foundations. The city government was a rather simple and inexpensive affair, doing pretty much as cities were doing a century, or perhaps even ten centuries, before.

But the last fifty years have told a different story. Scientific discoveries have made the modern city necessary and possible. To work in great factories, men must live in congested areas. This congestion of population has created new needs—traffic control, street widening, ample fire protection, additional police, better street lighting, and adequate water-supply. Higher standards of living have compelled the maintenance of parks, boulevards and museums, increased educational facilities, libraries, and concerts. Increasing humanitarianism has prompted the establishment of playgrounds, better prisons, care of the sick, and many activities unknown to citizens and officials of a generation ago. Scientific development has compelled the technical and expensive administration of old activities, particularly relating to public health, water-supply, and the disposal of wastes. Moreover, education no longer consists of the three R's.

The Great Cost of City Government

In consequence, the per capita cost of government in large cities has quadrupled and public debts have multiplied. City government, formerly simple and cheap, has necessarily grown technical and costly. The new city is a great business corporation, employing thousands of men and women, owning vast properties, equipment, and supplies; borrowing large sums on its credit; and engaging in extensive business for the benefit of the community. It stimulates commerce and industry; administers charity; cures the sick; protects the well; provides recreation; preserves life and property; and manages utilities that supply urgent public needs.

So the old French city of Detroit has changed. To-day its population is a million and it collects $40,000,000 a year in taxes to conduct 184 activities. Has the technique of its government and workable democracy kept pace with this tremendous growth? Obviously not—for this or any other community.

Effective democracy is not something of a day or of a generation. A civic conscience equal to modern civic problems must be developed within the schools and in the gradual appreciation by mankind that wealth and leadership owe a responsibility to the community, the paying of which is receipted in unmeasurable satisfaction.

Citizen Interest Essential

But technique in government in part is **obtainable quickly, though not by individual citizen action. To keep in touch with the** public servants responsible for each public activity, to know how each public dollar is obtained and spent, and to judge the effectiveness with which each technical task is performed, is more than any one citizen can undertake. Yet effective government cannot result unless the public can criticise from facts rather than from misinformation and will help officials change undesirable

TABLE SHOWING POPULATION, ASSESSED VALUATION TAX RATE
TAX LEVY, PER CAPITA TAX, NET DEBT AND PER CAPITA DEBT
from
1856 to 1921

Note : For the purpose of uniform comparison, the assessments and tax rates prior to 1876 have been recomputed on the basis of 100 % of the actual valuation, in place of the legal 30 % basis
Note : Prior to 1918 gross water debt was used.

Year	Population	Assessed Valuation	Tax Rate	Tax Levy	Per Capita Tax	Net Debt	Per Capita Debt
1921	942,373	$ 1,853,196,420	$ 21.67	$ 40,164,706	$ 42.62	$ 86,753,429	$ 93.06
1920	993,739	1,698,006,730	20.66	35,086,358	35.31	36,616,286	36.85
1919	950,000	1,374,532,330	18.55	25,501,273	26.84	26,874,708	28.29
1918	900,000	1,235,524,220	17.89	22,010,134	24.35	21,945,727	24.38
1917	820,778	1,174,517,900	13.80	16,218,778	19.67	20,104,791	24.61
1916	734,562	731,991,960	18.52	13,494,144	18.49	18,164,863	24.73
1915	678,746	554,382,950	23.64	13,106,187	19.31	16,442,939	24.24
1914	595,000	521,295,500	19.69	10,267,999	17.25	15,155,293	25.48
1913	567,920	486,763,120	20.29	9,877,183	17.31	9,802,281	17.26
1912	536,139	452,255,100	19.93	9,014,654	16.81	8,121,068	15.14
1911	499,030	402,652,210	18.15	7,311,161	14.65	8,255,555	16.55
1910	465,766	372,070,980	18.37	6,837,638	14.68	8,030,924	17.25
1909	440,412	350,269,910	18.07	6,329,536	14.37	7,778,188	17.65
1908	426,592	339,217,590	15.34	5,204,001	12.19	6,554,021	15.38
1907	404,782	335,997,380	15.46	4,996,786	12.34	6,181,972	15.30
1906	377,208	305,656,900	14.72	4,317,507	11.45	5,814,402	15.41
1905	369,805	287,268,670	14.70	4,051,363	10.97	5,221,266	14.12
1904	353,238	277,982,370	15.33	4,083,401	11.56	5,047,360	14.27
1903	339,550	271,868,920	16.57	4,270,393	12.59	4,993,330	14.71
1902	326,178	249,503,720	17.29	4,131,603	12.67	4,772,764	14.64
1901	313,886	247,248,500	15.70	3,777,425	12.03	4,612,090	14.70
1900	285,704	244,371,550	15.40	3,662,878	12.82	4,514,190	15.78
1899	275,000	216,971,000	16.33	3,514,092	12.78	4,346,401	15.80
1898	268,000	207,636,860	15.99	3,304,247	12.32	4,396,855	16.40
1897	260,000	206,825,870	17.68	3,640,878	14.00	4,539,723	17.46
1896	253,000	209,642,100	15.59	3,253,301	12.86	4,688,483	18.51
1895	245,000	209,586,330	15.70	3,281,449	13.40	4,801,796	19.60
1894	237,798	209,151,220	15.77	3,285,162	13.82	4,559,294	19.16
1893	228,000	199,679,210	15.16	3,015,818	13.23	3,277,434	14.36
1892	220,000	184,927,130	16.63	3,062,949	13.92	3,192,983	14.51
1891	213,000	175,450,310	16.78	2,934,555	13.77	2,368,800	11.12
1890	205,876	161,828,570	15.73	2,545,327	12.36	2,159,226	10.40
1889	195,000	156,505,790	14.29	2,236,464	11.46	1,990,024	10.21
1888	178,000	152,299,140	13.10	1,995,003	11.21	2,018,624	11.33
1887	164,000	142,407,880	12.04	1,714,431	10.45	1,853,015	11.30
1886	152,000	133,448,580	10.82	1,444,215	9.50	1,486,490	9.77
1885	142,000	116,249,945	10.77	1,252,343	8.82	1,462,262	10.30
1884	132,956	110,721,995	11.44	1,326,500	9.98	1,590,706	11.98
1883	128,000	105,910,924	10.88	1,199,244	9.36	1,798,232	14.05
1882	124,000	94,891,107	12.09	1,194,108	9.64	2,107,817	17.00
1881	120,000	87,629,695	11.36	995,448	8.29	2,264,958	18.86
1880	116,340	84,363,790	11.83	1,004,635	8.60	2,431,772	20.90
1879	113,000	83,198,040	10.90	907,428	8.03	2,221,582	19.68
1878	110,000	87,865,685	9.03	794,009	7.22	2,327,543	21.16
1877	107,000	93,709,375	9.49	880,990	8.23	2,430,500	22.72
1876	105,000	94,570,905	10.27	971,929	9.25	2,444,074	23.27
1875	103,000	92,482,100	11.94	1,104,515	10.72	2,510,614	24.35
1874	101,255	91,443,233	10.85	992,515	9.80	2,208,365	21.80
1873	95,000	90,305,483	9.70	875,696	9.22	1,778,647	18.72
1872	89,000	78,718,913	9.98	785,248	8.82	1,677,485	18.85
1871	84,000	74,509,303	12.32	918,207	10.93	1,640,128	19.52
1870	79,603	78,677,753	9.03	710,661	8.93	1,517,031	19.06
1869	75,000	76,456,510	9.34	713,095	9.51	1,366,796	18.22
1868	70,000	68,014,236	7.25	492,756	7.04	1,150,707	16.44
1867	65,000	77,656,140	6.06	470,839	7.24	1,129,324	17.37
1866	61,000	71,246,430	5.71	396,675	6.50	1,026,963	16.83
1865	57,000	66,816,100	5.44	363,400	6.37	1,070,632	18.78
1864	53,180	61,311,473	4.79	293,751	5.52	942,019	17.71
1863	51,000	56,739,913	4.32	245,057	4.81	937,160	18.37
1862	49,000	52,708,693	3.76	198,176	4.04	930,408	18.99
1861	47,000	50,294,196	3.79	192,923	4.11	947,000	20.14
1860	45,619	54,046,310	3.80	205,446	4.54	954,846	20.92
1859	44,800	52,555,033	3.94	207,179	4.63	912,929	20.39
1858	44,000	54,598,903	3.70	201,748	4.58	926,070	21.05
1857	43,300	49,154,593	3.41	167,880	3.88	785,880	18.16
1856	42,700	45.858,610	3.59	164,543	3.85	799,587	18.71

DETROIT'S GROWTH IN POPULATION AND MUNICIPAL UNDERTAKINGS

conditions. Intelligent citizen criticism and cooperation is the underlying theory upon which effective popular government is based.

Public officers and their employees are usually eager to perform their work well. They desire to plan ahead to meet future public needs, and are willing to adopt new methods of operation in their departments if those methods will let them do their work better. When such improvements are not made, it is frequently because such officers are too busy with daily routine to discover and install changes in procedure which will mean greater economy and efficiency. Even if contemplated, changes of long-established methods are sometimes politically unacceptable and cannot be made without public support. Plans cannot be materialized without citizen interest.

Governmental research is an instrument for organizing and for applying that citizen interest. It means collecting the facts concerning city operations, with recommendations for improvement, and placing such facts and recommendations before officials; stimulating citizen concern in future city developments; and, finally, laying the facts of government before the public, when a definite end will be served by so doing.

The idea of organized citizen cooperation with public officials through fact-finding in place of fault-finding is not new. Conditions of the past ten years, however, have changed an emphasis from "lower taxes" to "getting the most for the money," in order that otherwise neglected requirements may be met.

But such cooperation must offer critical study and constructive planning in place of criticism. It involves a study of conditions, with suggestions for improvement, made to the official concerned and not to the press. In a carefully prepared report on any subject, questions of fact need not, and should not, be matters of difference. Deductions from facts, however, are easily matters of personal opinion. In reports dealing with important and technical subjects, the opportunity for such differences of opinion must be clearly recognized and every effort made to avoid categorical solutions of the questions raised. Rather, the effort should be made to indicate conditions and problems and suggest solutions which have proved successful in communities of similar size and conditions.

Intelligent Investigation Needed

Nor can such cooperation make pretension of being competent to cover all the technical lines of city endeavor. It can offer technical experience in certain lines, secure special advice in other lines, and frankly admit inability to help in others. And these "other lines" to which technical assistance cannot be brought are many. Experience has convinced officials generally that citizen research is helpful and should be used. Taxation has convinced thoughtful citizens generally that it pays to have unofficial representatives "sitting on the city hall steps." But neither officials nor citizens realize fully as yet the need of pure research in public administration.

Important functions in government are without advantages of real experimentation. Where is there a group with adequate finances and personnel which is contributing to the science of policing, crime prevention, court procedure, prosecution, street cleaning, snow removal, garbage disposal, etc.? The American Telephone and Telegraph Company is said to employ 2,500 persons working continuously seeking new devices that we may have better telephones. In contrast, consider the few persons and few dollars that are seeking in a coordinated way new devices that we may have better government. The sporadic efforts of present citizen agencies are largely engaged in applying the old rather than in discovering and publishing the new.

But let us consider a single city as an example—say Detroit. In less than 75 years the number of city activities has increased 868 per cent; population has increased 2,225 per cent; assessed wealth has increased 3,941 per cent, and the tax burden has increased 24,142 per cent. Seventy-five years is a long lifetime. Twenty years would take us back within the memory of most, and to the beginning of modern things. Within this time, since 1900, these increases have been: activities, 125 per cent; population, 250 per cent; assessed wealth, 660 per cent; and taxation, 1,000 per cent.

From such evidence, the present Mayor of Detroit is credited with the remark that "present city government must get less money and more brains." "More brains" cannot mean just individual ability, but rather correlated, intelligent effort to find better methods of conducting public business, and the making of these methods available to every city.

GROWTH OF MUNICIPAL ACTIVITIES IN DETROIT

Prior to
1824 Elections
Legislative
Executive
Legal

Prior to
1824 Taxation
Treasurer
Police Department
Municipal Court

Prior to 1824	Fire Department
	Elementary School
	Street Grading
1832	Poor Relief
1834	Street Paving
1835	Sewers
	Sewer Cleaning
	Water-Supply
1841	School Census
1849	Controller
	Street Lighting
1857	High School
1860	Prison
1863	Library
1864	Weight Inspectors
	Licenses
1866	Sanitary Police
1867	Detectives
1869	Pound
	Police Signals
1870	Parks
	Public Buildings
1871	Harbor Police
1872	Permit Inspectors
1873	Engineering
1874	Evening Elementary School
1877	Health Superintendents
1880	Vital Statistics
	Teachers College
	Periodical Library
1881	Truancy Police
	Criminal Identification
1882	Outdoor Relief
	Hospital for Sick
	Education of Incorrigibles
1884	Building Inspection
	Fire Alarm Telegraph
	Fire Pension
1886	Milk Inspection
	Food Inspection
	Fire Medical Service
	Library Reading Room
1887	Garbage Collection
	Rubbish Collection
1888	Water Meters
	Meter Repairs
1890	Market Sheds
	Zoo
1890	Ice Service
	Free Medical Service
1891	Free School Books
1891	Gas Meter Inspection
	Fire Boats
1892	Art Museum
	Plumbers' Examination
	Mounted Police
	Reference Library
1893	Bathing-Beach
	Plumbing Inspection
1894	City Attorney
	Hand Street Cleaning
	Chemical Laboratory
	Bacteriological Laboratory
	Kindergarten
1895	Electrical Inspection
	Blind Library
1896	Snow Removal
1897	Band Concerts
1898	Nursing
	Greenhouse
	Education of Deaf
	Branch Libraries
1899	Alley Cleaning
1901	School Children's Inspection
	Smoke Inspection
1902	Permits for Sidewalks
	Housing Inspection
1903	Meat Inspection
	Aquarium
	Conservatory
	Police Medical Service
1904	Police Pension
	Sewage Dump
	Street Flushing
	Tuberculosis Clinic
	Evening High School
1905	Venereal Disease Clinic
	Comfort Stations
1906	Forestry
	Technical High School
1907	Motor Police
	Tuberculosis Hospital
	Baths
1908	Traffic Police
1908	Free Evening Lectures
	Motion Picture Censorship
	New Building Inspection
	Sign Inspection
	Wire Inspection
1909	Child Clinic
	Contagious Disease Hospital
	Education of Cripples
	Education of Stammerers
	School Transportation
	Boiler Inspection
1910	Police Training School
	Motor Bus
	Elevator Inspection
	Water High Pressure
1911	Civil Service
	Property Identification
	Education of the Anemic
	Education of the Blind
	Summer Elementary School
	Summer High School
	Summer Technical High School
	Evening Technical School
1912	Detention Home
	Refectories
	Boating
	Boulevard Lighting
1913	Police Record Bureau
	Educational Research
1914	Serology Laboratory
	Serology Inspection
	Ferries
	Charity Registration
	Ambulance
	Social Service
	Hospital
	Playgrounds
1914	School Gardens
	Festivals
	Oil Inspection
1915	Auto Recovery
	Vice Squad
	Park Sewage Treatment
	Refrigeration Inspection
1916	Street Opening Bureau
	Grade Separation Bureau
	Junior College
	School Purchases
	Recreation Camps
1917	Summer Teachers College
	Evening Teachers College
	Parent Schools
	Community Centers
	Fire Prevention
1918	Purchasing Agent
	City Planning
	House Numbers
	Complaint Bureau
	Auto Repair
	Motor Sweeper
	Continuation School
	Educational Cost Accounting
	Testing Laboratory
	Safety Bureau
	Street Railway
1919	Probation Extension
	Central Garage
	Women Police
	Medical College
	Maternity Hospital
	Tuberculosis Camp
	Summer Junior College
	Evening Junior College
	School Architecture
1920	Psychological Clinic
	Research Engineer
	Prison Farm
	Auto Dispatch
	Nutrition
	City Census

American Education Week, December 3-9

TO focus the attention of the American people on their educational needs, the week beginning December 3 has been set aside as American Education Week by a joint committee of the National Education Association and of the American Legion. This committee, in cooperation with the U. S. Bureau of Education, has issued a program for each day of the week under the following headings:

Sunday—For God and Country
Monday—American Citizenship Day
Tuesday—Patriotism Day
Wednesday—School and Teacher Day
Thursday—Illiteracy Day
Friday—Equality of Opportunity
Saturday—Physical Educational Day

The following suggestions are offered to chambers of commerce and other cooperating agencies:

1. Urge ministers of all denominations to preach upon the subject of education, Sunday, December 3, 1922.
2. Urge the Mayor to issue a proclamation setting aside this week as American Education Week and asking the people to cooperate.
3. Urge the newspapers to give all space possible to educational matters, articles, editorials, and news material.
4. Urge the merchants to use window displays appropriate for the occasion. Urge them to devote as much space as possible to matters of education in their newspaper advertisements.
5. Ask the moving-picture theaters to flash slides on the screen urging the people to visit the schools and study educational questions.
6. Have speakers at all public meetings held that week talk a few minutes on the necessity of education.
7. Cooperate with the educational officials and other patriotic, civic, and fraternal organizations.
8. Advertise American Education Week on letterheads and envelopes.

The complete program and other publicity aids may be secured from the National Education Association, 1201 Sixteenth Street, Washington, D. C.

The Development of Street Lighting in 1922

Report of Committee on Street Lighting, American Society for Municipal Improvements

A NEW 2,500-candle-power (25,000-lumen) gas-filled incandescent lamp of the 20-ampere series type has been developed and placed on the market. This new lamp is the most powerful light source that has ever been made available commercially for the lighting of streets. It is particularly adapted to business street lighting in those cities where it is desired to use especially high levels of lighting in important, congested districts. Previously the strongest illuminant available in the series-type gas-filled tungsten lamp was one of 1,500-candle-power (15,000-lumen). The 2,500-candle-power lamp makes it possible, therefore, to obtain nearly twice as much light from a single incandescent light source as has been obtained heretofore.

The old-style less efficient arcs have practically disappeared from use. They have been replaced in most cases by gas-filled incandescent tungsten series lamps. Incandescent lamps are now available in a complete range of sizes up to 2,500-candle-power, interchangeable on the same circuits and adapted for use in a wide variety of lanterns, globes, and refractors, for White Way, thoroughfare, boulevard, residence street, and highway lighting.

There is a very noticeable trend toward the use of larger lamp sizes. Engineers who have studied comparative costs and illuminating efficiencies are in agreement that 100 candle-power is the minimum lamp size that it is economical to use for street lighting. The lamps of less than 100 candle-power which are in use under the terms of some of the older street lighting contracts not only operate at a lower efficiency, but are uneconomical because too great a pro-

EXHIBIT OF EIGHTEEN LIGHTING STANDARDS AND GLOBES AT NELA PARK, CLEVELAND

Editorial Note.—The six lighting standards shown on page 413 are typical of the exhibit at Nela Park. The upper row from left to right illustrates the Milwaukee harp one-piece Holophane glass refractor unit mounted on a Massey concrete post. The 400-candle-power lamp is mounted 15 feet high. The second unit is a Form 18 Novalux lantern with clear rippled glass panels and dome refractor made by the General Electric Company and mounted on a King cast iron standard. The 1500-candle-power lamp is mounted 14 feet high. The third is a Form 16 Novalux General Electric unit with a No. 37 Genco glass globe, mounted on an Elreco tubular steel combination railway and lighting standard and bracket. The 1,000-candle-power lamp is mounted 15 feet high. The lower row from left to right illustrates an octagonal Reflecto-Lux unit with clear ribbed glass panels, parabolic reflectors and Cutter-Westinghouse Arcadian cast iron standard. The 1,500-candle-power lamp is mounted 13 feet high. The second unit is a Form 16 Novalux globe and canopy on an Electric Railway Equipment Company tubular steel standard. The 1,500-candle-power lamp is set 13½ feet high. The third is a Form 23 Novalux lantern with Colonial alabaster glass panels and dome refractor on a Union Metal Mfg. Co. pressed steel standard. The 1,500-candle-power lamp is set 15 feet high.

portion of the annual street lighting cost to the city (sometimes as much as three-fourths of the total expenditure) is made up of fixed charges on the installation, and only a relatively small part of the expenditure goes for the production of light. Particularly where ornamental equipment is installed and where the investment cost is therefore fairly high per lamp, there is a growing conviction that the 250-candle-power lamp is the minimum economical size to be used in designing a new installation. However, very effective systems using lower candle-power lamps are being installed.

Ornamental street lighting equipment is rapidly becoming the standard, not only for business districts and parks, but also for thoroughfares and residential streets throughout the area of the city. While, of course, in many cities the overhead wooden-pole mast-arm or the center suspension is still being retained, this type of construction is coming to be regarded somewhat as a temporary or emergency measure which serves until arrangements can be made for suitable ornamental lighting.

It is noted that a very large number of new real estate subdivisions are being lighted by ornamental standards properly spaced before the lots are placed on sale. This is unquestionably a desirable practice, for not only are the property values increased by the absence of unsightly wooden pole constructions on the streets, but it is also true that the underground circuit construction, erection of posts, etc., can usually be handled much more economically before the streets have been paved, and before concrete drives have been put in, than afterwards.

One reason for the growing popularity of ornamental equipments for thoroughfare and residence streets has been the development of units which retain the efficiency characteristic of well-designed overhead pendent utilitarian units. Thus, in addition to the familiar opal globe, there are now available a number of carefully worked out refracting and reflecting units, varied in contour and appearance, suitable for both upright and bracket mounting, which give a materially increased utilization of light on the street surface.

Some New Installations

There have been many important extensions and improvements in the lighting of different cities during the past year, too many, in fact, to be individually discussed. Among these a notable installation utilizing a new equipment combining efficiency and good appearance is that in East Cleveland, Ohio, wherein a refractor lantern with a rippled enclosing globe is mounted on a 4½-foot bracket 16 feet above the street for the residential districts. On the thoroughfares, 400- to 1,000 candle-power lamps in similar units of larger size are used, with a mounting height of 20 feet and a bracket 6 feet in length. A novel feature of this installation is the use of 150-watt multiple lamps (200 candle-power) in the residence districts, supplied from underground circuits brought out along the side lot lines. By this means the lamps are furnished with current from the regular 115-volt house-lighting circuits without separate distribution. They are turned on and off by automatic switches located in each block.

The entire city of Kansas City, Mo., is being relighted by ornamental units containing 400- and 600-candle-power Mazda lamps in rippled diffusing globes. The installation is expected to total 10,000 units or more. Ornamental trolley pole brackets are used in the main business section. Ornamental posts evenly spaced are installed for all other streets.

In St. Paul, Minn., Summit Avenue, a well-kept residential boulevard, was lighted by a new system consisting of 400 ornamental refractor lantern standards with 400-candle-power incandescent lamps spaced approximately 120 feet apart.

Mandan, N. Dak., a city of 4,336 people, installed a new ornamental system of 447 standards—one lamp standard for every ten persons.

There has been growing interest in the subject of lighting of highways between cities during the past year, stimulated by a desire to increase the safety of night driving on these thoroughfares. One special equipment which has been developed for this purpose consists of a double set of parabolic reflectors which confine the light to the roadway. Favorable comments have been made upon a number of installations of these units mounted from 30 to 35 feet above the road and spaced from 300 to 500 feet apart. One result of the development

of artificial lighting of highways will undoubtedly be a further increase in night traffic passing through cities and villages, which in turn will require an increased provision for proper illumination of the thoroughfares leading through the municipalities.

Among the data on the relation of better lighting to accident and crime prevention which have been brought forward in the past year may be mentioned a survey discussed in a paper presented before the American Society for Municipal Improvements last November showing that 17.6 per cent of the street traffic accidents occurring at night were attributable to lack of illumination. According to the survey, nearly 600 fatalities are annually chargeable to this cause, and approximately $54,000,000 of the annual street accident loss. At the same time it was reported that the total expenditure for street lighting in the United States was not in excess of $50,000,000. It was further pointed out that the figure of 17.6 per cent was very conservative in evaluating the usefulness of illumination in preventing accidents, for, as a matter of fact, the streets of all the cities covered in the survey were illuminated at night by lighting of varying degrees of effectiveness. According to the survey referred to, in an individual city where the need for better street lighting is especially evident, the percentage of night accidents chargeable to the lack of light is likely to run as high as 50 per cent. On the other hand, in the case of those districts where fairly high levels of artificial street lighting are provided by so-called White Way systems, the percentage of night accidents chargeable to lack of illumination can be said to be fairly low.

It is pertinent to emphasize that while the expenditures for higher levels of artificial street illumination may be amply justified as an accident prevention measure, they can also easily be justified when the effect on the reduction of crime is taken into consideration. For example, a recent analysis of crimes occurring in the downtown district of Cleveland indicated that the installation of the White Way lighting system could be credited with a decrease of 41 per cent in the amount of crime on those particular streets as compared with the remainder of the city.

In the past there has been a wide diversity in practise as to the illumination of streets of the same character and importance in different municipalities. These variations have been due in part to differences in local opinion as to the requirements to be fulfilled, but in many cases the extent of available funds has been the important governing factor. With more evidence as to the real value of street lighting, not only from

STREET LIGHTING PRACTISE

Street Class	Lamp C.P. per Post	Mounting Height	Desirable Lamp Spacing Ft.	Arrangement of Lamps	Lamps C. P. per Foot Length of Street
100,000 or Larger Population					
Principal business	1,000-5,000	14-25	80-150	Parallel	20-100
Secondary business	1,000-2,500	14-18	80-125	Parallel	10-50
Principal thoroughfare	600-1,500	20-25	125-250	Parallel	3-10
Secondary thoroughfares, wholesale and manufacturing district	400-1,000	20-25	125-250	Staggered	2-5
Boulevards and parks	250-1,000	14-20	125-250	Parallel or one side	1-5
Residential	250-600	14-20	125-250	Staggered	1-4
Alleys, business section	250-600	16-20	125-250	One side	2-5
Outlying streets and alleys	100-250	16-20	200-400	One side	¼-1
20,000 to 100,000 Population					
Business	1,000-2,500	14-18	80-125	Parallel	10-50
Thoroughfares	400-1,000	20-25	125-250	Staggered	2-5
Boulevards and parks	250-1,000	14-20	125-250	Parallel or one side	1-5
Residential	250-600	14-20	125-250	Staggered	1-3
Outlying streets and alleys	100-250	15-20	200-400	One side	¼-1
5,000 to 20,000 Population					
Business	600-1,500	14-18	80-125	Parallel	5-30
Thoroughfares	400-1,000	20-25	125-250	Staggered or one side	2-5
Boulevards and parks	250-600	14-20	125-250	Parallel or one side	1-3
Residential	250-400	14-20	125-250	Staggered or one side	1-3
Outlying streets and alleys	100-250	16-20	200-400	One side	¼-1
5,000 or Smaller Population					
Business	250-600	12-16	80-125	Parallel or staggered	2-10
Thoroughfares	250-600	16-20	125-250	Staggered or one side	1-3
Residential	250	14-20	125-250	Staggered or one side	1-2
Alleys	100	16-20	200-400	One side	¼-½
Highways	250-400	25-35	300-600	One side	½-1

the standpoints of comfort, convenience, and commercial advantage, but also from the standpoint of accident and crime prevention, there appears to be a more definite crystallization of opinion as to the desirable practise for the different classes of streets. The table on page 414 has been assembled to indicate the desirable range of practise under present conditions.

The committee recognizes that the 100-candle-power lamps have a place in residential sections, on narrow streets, curbed parkways, in parks, in alleys and certain outlying streets.

Character of Construction

Varying types of ornamental equipment are suited for the different classes of streets. For business streets the upright column with a single lamp is most common, though ornamental trolley pole brackets are often used. For intensive or White Way lighting with 3,000- to 5,000-candle-power per standard, two-light or three-light units have been adopted. For thoroughfares, boulevards, parks, and residential streets, both ornamental bracket standards and upright standards are common. In some instances ornamental brackets are attached to trolley poles or to other poles already in place. The preference is for underground wiring, though some ornamental poles can be successfully adapted to use overhead wiring. For outlying districts, alleys, and highways, underground wiring is seldom practical.

The experience of a number of municipalities that have improved their lighting throughout the city to bring it into line with modern standards indicates that this can be done effectively at the modest cost of from $1.50 to $2.50 annually per capita. In most cases the latter figure makes possible the installation of an ornamental system throughout the city. In a comprehensive survey recently reported, the highest expenditure in any city was $4.81 per capita per year. It should be pointed out, however, that comparisons of cost on a per capita basis are likely to be misleading, since there are such great variations in miles of paved street per thousand of population. Street length as a basis of computation introduces other variables depending upon the arrangements of intersections, width of streets, amount of foliage, character of paving and local costs, but the following tabulation is given as indicating the range of cost of carefully designed ornamental street lighting for different classes of streets, assuming that there are no extreme conditions affecting the cost.

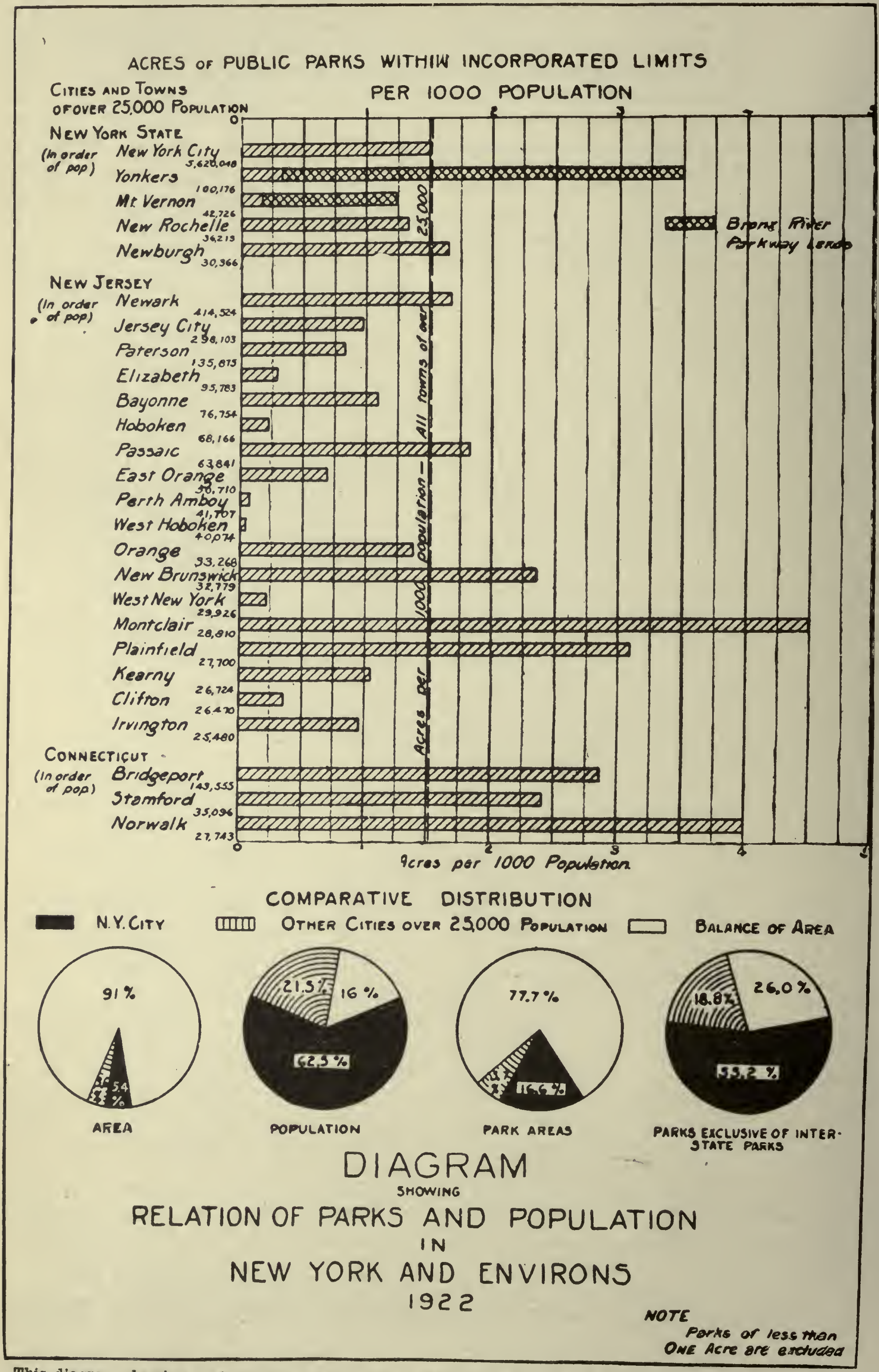
	Annual Cost per Foot Length of Street
Business district White Way...........	$1.00-$4.00
Thoroughfares and boulevards..........	0.30- 1.20
Residential streets	0.20- 0.80

The crowded condition of city budgets has made it difficult for many municipalities to provide the necessary improvements in street lighting. In recognition of this difficulty some states already have acts permitting improved street lighting to be charged back to property holders, as is done in the case of paving and other necessary street improvements. Under this plan the contract for the installation and operation of the lighting can still be handled by the municipality itself, and this is very desirable to insure continuance of good service.

For years it was almost the universal practise to have the contract charges for street lighting based on a fixed charge per lamp per year, which included allowance for carrying charges on the investment as well as the cost of operation and maintenance. However, in the case of White Way lighting, on account of the special investment necessary, the equipment has often been installed by the municipality and a separate contract entered into for the operation and maintenance of the system. This same practise appears to be growing in favor in the case of municipalities where ornamental installations are being made for the entire city. Proponents of this plan point out that the municipality, under this arrangement, has an unlimited choice in the selection of the type and design of standards and lamp equipments installed, and at the same time is in a position to secure favorable rates for maintenance and operation of the system, since the contractor is not faced with the necessity of amortizing the investment during a relatively short contract period.

This street lighting report was submitted by C. W. Koiner, City Manager, Pasadena, Calif.; Earl A. Anderson, Illuminating Engineer, National Lamp Works, Cleveland, Ohio, and Ralph Toensfeldt, Engineer, Division of Lighting, St. Louis, Mo.

How Much Park Space Has Your City?



This diagram showing park statistics is one of a large number prepared for the Committee on the Plan of New York and Its Environs, through the Physical Survey, under the direction of Nelson P. Lewis

Forward Steps in Municipal Affairs

Recreation Departments

A Citizen's Gift to the Children of His City

GRAND JUNCTION, COLO.—Cooperation between a public-spirited merchant, W. J. Moyer, with City Manager George Garrett and the city councilmen, has given to Grand Junction a municipal swimming pool that has filled a long-felt need through the hot summer just ended.

Mr. Moyer, who is childless, desired to give to the children of the city a gift that would show his interest in them, and asked his nephew, William Weiser, President of the Grand Valley National Bank, to name the form of the gift. The nephew, remembering a boyhood spent in a community where the only swimming possible was in irrigating ditches, suggested a concrete swimming pool, and Mr. Moyer accordingly appropriated funds and secured designs for a pool that is modern in every respect.

The pool itself is of reinforced concrete, and its value to the community can be judged from its thoroughly adequate dimensions. The main pool is 100 by 75 feet. It varies in depth from 7½ feet to 1½ feet. Adjoining the main pool is a wading pool 12 by 75 feet, and beyond it is a sand-pit of the same size. Two pergolas flank the sides of the wading pool and sand-pit, for the convenience of mothers or nurses who have their charges at the pool. These pergolas are 50 by 12 feet and they have been provided with seats for the comfort of the onlookers. Two shower rooms, 10 by 12 feet, are provided, and there are 60 dressing-rooms, 3 by 5 feet 4 inches. The pool has proved to be so popular that the capacity of the dressing-rooms has been taxed on many days this summer.

The pool and its auxiliary features were presented to the city by Mr. and Mrs. Moyer with the proviso that on at least two days of each week they are to be free to children under 16. An ordinance was passed by the City Council, and later on the charter will be so amended as to provide for making this a permanent feature.

An administration building of frame and stucco contains rest rooms for women and men, offices where tickets, bathing-suits and towels are obtained, and a large refreshment room where ice cream and soft drinks are served. The city refused to give out a concession for refreshment privileges, preferring to use whatever profit there might

GRAND JUNCTION'S NEW MUNICIPAL SWIMMING POOL, THE GIFT OF A PUBLIC-SPIRITED CITIZEN

EN ROUTE TO OAKLAND'S MUNICIPAL RECREATION CAMP
A party pausing at one of the stopping-places on the 150-mile trip

be for extension and maintenance of the pool and buildings. A substantial profit has been realized already, and it is the hope that, even allowing for the heavy patronage on the days when the pool is free to children, there will be a profit that will permit of added equipment as it is needed.

The total cost of the pool was about $30,000, part of this sum being given by Mr. and Mrs. Moyer and the rest taken from the city park funds. The pool was dedicated on June 8, with one of the largest crowds ever gathered together in the city present at the exercises, which were also attended by Governor Shoup and other notables of the state.

MERLE McCLINTOCK.

Oakland's Municipal Recreation Camp

Oakland, Calif.—The Oakland municipal recreation camp may become the model for the nation as well as for other municipalities, according to Stephen H. Mather, Director of National Parks, who was a visitor to this forest camp recently. It is situated in the Sierra Nevada Mountains, in Stanislaus County, on the Tuolumne River, 152 miles from the city of Oakland and 3,500 feet above sea-level.

The camp is for the benefit of permanent residents of Oakland or those who pay taxes on Oakland property. It is divided into three sections: one for the children, where boy and girl groups alternate in periods of two weeks each; one for adults, where families may remain for any length of time; and another section for automobile parties furnishing their own transportation and equipment.

The board, including tent accommodations, is $6 per week for grown-ups and $5 for children under twelve. The food is prepared by a competent chef and is well cooked and wholesome. Each person gives an hour's service a day toward the camp duties, the boys bringing in the supply of wood, and the girls taking turns at washing the dishes. The tents are provided with clean individual cots and mattresses, but the campers furnish their own blankets. The sanitary facilities are according to specifications of the U. S. Forest Service.

The fishing is fine, and there are several bathing pools of various depths. A number of interesting side trips can be taken from the main camp. Among them is a trip of ten miles to the Hetch Hetchy Valley, where development work is in progress on the water project of the Hetch Hetchy reservoir for the city of San Francisco. This, when completed, will give a water-supply for 4,000,000 people.

The site for the camp was given to the Recreation Department of Oakland by the United States Forest Service. The camp is operated on a cost basis. During 1922, about 3,200 persons were accommodated during the 17 weeks the camp was in progress.

JAY B. NASH,
Superintendent of Recreation.

Mayors

A Community Building in a South Dakota City

MITCHELL, S. DAK.—When the new Corn Palace was planned for the city of Mitchell, the builders dedicated it not only to the annual exhibition of grain and corn, but also to the needs of the community. It is reputed to be one of the finest municipal auditoriums in any small city in the United States.

The building has a seating capacity of from 4,000 to 4,500, a large stage, a floor suitable for dancing, a balcony on three sides, and places for booths. It was opened for the first time during Corn Palace Week in September, 1921. Since then it has served various community interests. Sousa's Band played on its stage in November; Governor McMaster spoke to a crowded house on Armistice Day; a week of community activity kept the Corn Palace open day and evening during the Christmas holidays; Governor Allen of Kansas spoke there in April. The largest gathering in the new building was probably during the first Mitchell Automobile Show, April 20, 21 and 22.

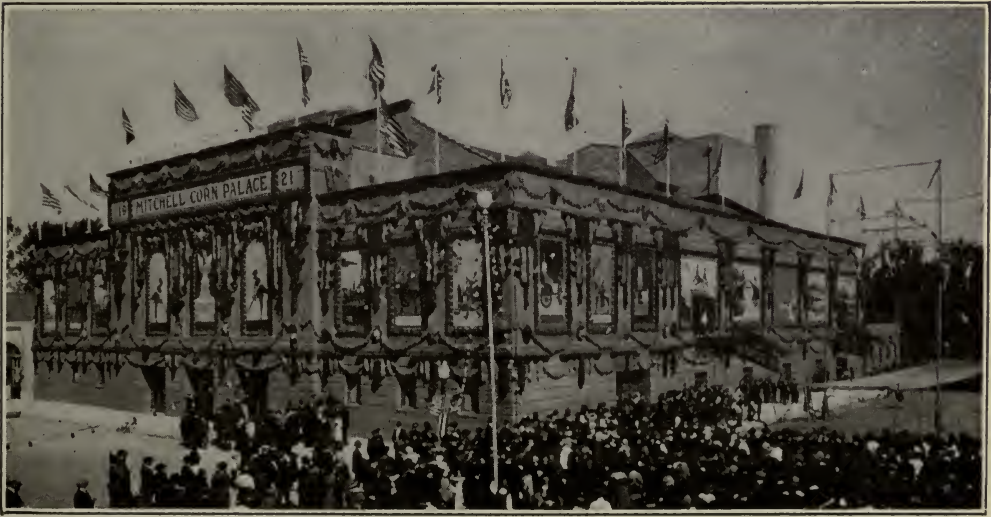
The building is of brick, each side carrying set-in panels in which decorations are placed. The decorative scheme shown in the accompanying photograph is that of disarmament. The central panel shows the dome of the Capitol at Washington. On either side, Miss America is seen laying down the sword; and all the other panels show the nations of the earth moving towards Washington to join in the disarmament program.

E. V. BOBB,
Mayor.

City Managers

City Purchases "Success Talks" for Employees

SALINA, KANS.—An interesting innovation in building up a cooperative spirit among municipal employees has been tried out in Salina. The city has purchased from Stevens-Davis and Company of Chicago a



MITCHELL'S CORN PALACE, A NOVEL MUNICIPAL BUILDING AND AUDITORIUM

WORKING FOR BETTER SCHOOLS
A few of the children who helped put across the Los Angeles $17,400,000 bond issue

series of "Success Talks" which have been used extensively by the larger corporations to promote a cordial spirit of cooperation among their employee groups. For the same reason, the city has introduced these "Success Talks. They include such statements as the following:

> "There is enough to know about any work there is to do to make the one who does that work an expert in his line. To be expert means to do the work in hand the very best that it can be done."

We feel that we are getting as a result splendid service and cooperation from our employees. We purchase these "Success Talks" by the year, the cost being very moderate. A copy of each week's talk is sent to each of the sixty-two municipal employees. Each month there is a rousing good meeting at which each of the talks is taken up and discussed from the standpoint of the city. At these municipal meetings prominent business men of Salina address the city employees. Their comments, and the meetings in general, seem to be much appreciated.

W. A. LAYTON,
City Manager.

Departments of Education

$17,400,000 for Los Angeles Schools

Los Angeles, Calif.—A landslide vote in favor of the Los Angeles school bond issue of $17,400,000 was cast on June 6, 1922. Following a spirited, and in some respects a spectacular, city-wide campaign of appeal and education in which thousands of school children took part, an overwhelming majority of 15 to 1 in favor of greater school facilities was registered.

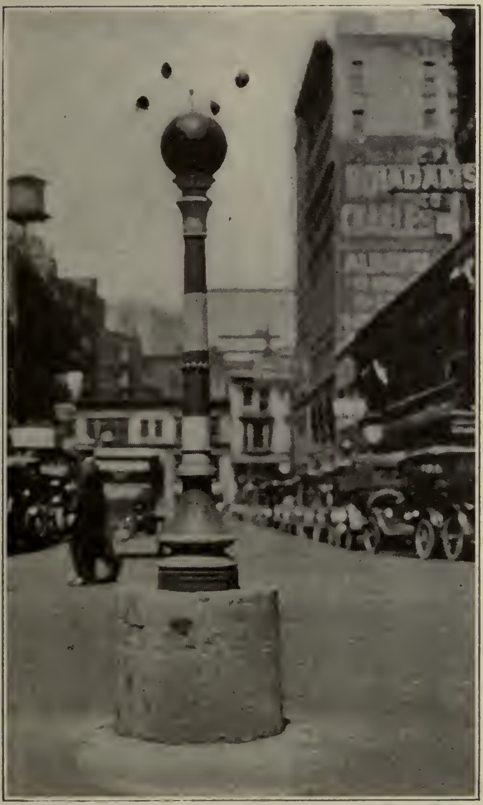
The school bond issue enables the school authorities to construct four new high schools and four new junior schools, make extensive additions to 25 senior and junior high schools, build or make additions to 97 elementary schools, and purchase a large number of school sites. The Board of Education plans to spend approximately $5,000,000 of the combined elementary and high school issues within a year after the initial bonds are sold, and $5,000,000 a year thereafter.

The bond issue of $17,400,000 was determined upon after an exhaustive survey of the entire school district of the city. The survey showed an astounding condition of such rapid growth in the school population that virtually all schools were required to conduct half-day sessions and resort to various other makeshifts, such as utilizing corridors, offices and storerooms for class purposes to accommodate the increasing thousands of school boys and girls.

The last tabulation of enrollment in the city's schools indicated a registration in excess of 139,000, an increase of 20,000 annually for the past three years. In many localities it has been necessary to hold school in tents and sheds of a purely temporary character.

In the recent bond campaign each school neighborhood had its own active group of parents, teachers and students at work. Thousands of automobiles were donated for the transportation of voters to the polls.

(MRS.) SUSAN M. DORSEY,
Superintendent of Schools.



A TRAFFIC SIGNAL THAT EVEN THE MOST CARELESS MOTORIST CANNOT FAIL TO SEE

HELPING THE STRANGER TO FIND HIS WAY IN DETROIT

Police Departments

Flashing Traffic Signal and Information Booth Attract Attention

DETROIT, MICH.—The traffic signal shown in the illustration is very effective, for no motorist can run into it without seeing it—which occasionally happens with some of the "silent policemen." It consists of a black and white iron post about 10 feet high set in a concrete base and surmounted by a red glass globe. Within is a brilliant electric bulb, and above is a wind-gage, connected by means of a small shaft to a device within the globe which keeps two broad, dark-colored blades traveling around the electric bulb. Thus, whenever the wind blows, which is nearly all the time, the light is made to flash. As a result, it is very conspicuous and can be seen for a long distance.

This particular signal is located at the intersection of Farmer Street and Grand River Avenue.

For the convenience of visitors to the city, the Police Department of Detroit has erected an information booth at the center of the city. This is in charge of officers who are specially trained to be able to answer almost any question one may ask about the city. City directories, telephone directories, maps, etc., are on hand, so that if a question is asked which the officer is unable to answer, he can soon look it up and supply the information.

It has been found that this booth is not only a great convenience to strangers, but also greatly simplifies the work of the police, because people ask their questions at the booth instead of going out into the middle of the street and distracting the attention of a traffic officer.

HARRY H. JACKSON,
Inspector, Traffic Division.

City Clerks

Warsaw Spruces Up

WARSAW, IND.—What sixteen months ago was one of the worst-looking places around Warsaw is to-day a small park of approximately three acres which is a credit to the city. This was brought about by making a fill of from six inches to two feet on some low swamp ground around the bank of Center Lake. The new park not only has a very fine lawn, but also one of the best swimming beaches in the neighborhood, all within three blocks of the court house and therefore accessible to all the citizens. When work on this improvement was started, many of the citizens were greatly opposed to what they thought was a waste of the taxpayers' money, but the change from what was to what is to-day, was so worth while that as the work progressed the opposition diminished. A look at the improvement itself made evident its value to the citizens.

A city dumping-ground that had for some time been a nuisance has also been cleaned up and filled in to make a playground, and to prevent a recurrence of the conditions surrounding the old dump a new ordinance has been enacted which insures the keeping of the playground and the new dump in a sanitary condition. Credit for the changes made belongs to Alderman Walter Kintzel, whose energy and enthusiasm resulted in the authorization to do the work. As sometimes befalls proposers, the task of carrying out the plan was laid upon Alderman Kintzel, and he was told to go ahead and to use his best judgment. The results have indicated his faith in the possibility of changing eyesores into assets.

R. O. NUSBAUM,
City Clerk.

Finance Departments

Fitchburg Also Gets the Facts to the Public

FITCHBURG, MASS.—Fitchburg's city officials were much interested in the item in the September issue of THE AMERICAN CITY entitled "Getting the Facts to the Public," in which Mr. Steffens of Detroit, Mich., gave the experience of that city in informing the citizens of the doings of the municipal government.

For a long time Fitchburg has been using much the same method. We have viewed our city government as a board of managers or directors, like the directors of a corporation, and the taxpayers as stockholders who furnish the funds with which to do business, and believing that it is just that they should be kept in touch with the distribution of their funds, we have made every effort to keep them posted. Every month we print a monthly balance sheet, and through the cooperation of our daily paper present to the public each month a statement of the funds in the treasury and the purposes for which these funds have been expended. The sheet also serves as a check on all the city departments, to the extent that as soon as it appears, each of the departments obtains a copy and compares its own total with the total in the balance sheet, so that if any differences are noted they may be investigated immediately and the errors rectified.

Many other cities in Massachusetts publish similar reports, and this publicity of expenditures appears to be really appreciated by the citizens.

F. D. PAGE,
City Auditor.

The Removal of Taste and Odors by Aeration, Filtration and Other Processes---Part II

By Norman J. Howard

Bacteriologist in Charge, Filtration Laboratories, Toronto, Ont.

> **The greatest objection raised against the chlorination of water has been the production of taste and odors in certain supplies. This condition has at times been used as an argument against the installation of sterilizing plants, and it must be admitted that where these objectionable conditions are of periodic occurrence, they cause much unrest and constitute a real nuisance. The writer is of opinion that in most cases taste could be overcome if authorities would make a thorough investigation and definitely establish a cause. The city of Toronto has just authorized a year's research work on this important subject, and preliminary observations carried out are most encouraging.**

Taste and Odors Following Chlorination of Water

THE cause of taste following the chlorination of water is not definitely established, yet certain controlling conditions have been observed at Milwaukee and elsewhere, and abatement of the attributed cause resulted in the elimination of taste. In treated waters two types of taste occur—chlorine, and a distinct medicinal taste. The latter is sometimes described as resembling the taste of iodoform. Each taste generally occurs separately, and the writer has no record where chlorine and iodoform taste have been reported as being present at the same time. Quite often excess chlorine smells and does not taste, but the iodoform compound both tastes and smells, particularly when the water temperature is above 50 degrees F. The chlorinous taste is, as the word implies, due to excess chlorine, while the iodoform taste is said to be due to the presence of chloro-phenols. Extensive observations made by the writer have not convinced him that this is the sole cause, although it is admitted that the presence of phenol in small quantities does seemingly combine with chlorine and form chemical compounds which produce most offensive tastes and odors. Laboratory work carried out during the past few months has produced some surprising, and at times puzzling, results. It has been generally assumed that the presence of organic matter is essential for the production of iodoform taste in chlorinated water. In distilled water treated with taste-producing doses of chlorine and phenol, the characteristic iodoform taste is not produced, but a pronounced chlorinous taste results. If this same water is passed through a rapid sand filter, the organic matter or some unknown substance is taken up by the water and produces a most offensive taste and odor. Inversely, slow and filtered water after treatment with chlorine and phenol develops a taste which is, however, greatly lessened by passage through the same filter.

When in Europe last summer, the writer saw records indicating that the presence of organic matter and phenol was not necessary for the production of the iodoform taste. The case in point has reference to a deep well water of great organic purity and free of phenols, which had received some slight surface water pollution and consequently was chlorinated. The well formed part of a supply for a large community, and after treatment with a small dose of chlorine, a pronounced iodoform taste resulted. One is therefore forced to the opinion that while organic matter and phenols are contributory to taste production, in certain cases there must be other causes which act in a similar taste-producing manner. In support of this, it should be pointed out that at Toronto, where industrial wastes are discharged into the city sewers all the year round, and extensive tests are daily made on the raw water, the iodoform taste occurs largely in the early spring and late fall, and if phenol were the only cause of this taste, objectionable conditions would prevail throughout the year. The obvious answer is that at certain low-temperature periods some other organic or vegetable matter combines with chlorine or phenol, or even both, producing the conditions complained of. It is also possible that if phenol is the direct cause, increased biological activity in the warm summer months assists in preventing the formation of obnoxious chemical compounds.

Before discussing the iodoform taste in detail, it would be well to dwell briefly upon the chlorinous taste or odor, which not infrequently occurs under two conditions: first, in water comparatively free from pollution; and, second, in water where too great a quantity of chlorine has been applied. The elimination of the first-named condition is practically impossible, except by aeration, which is neither practical nor necessary. Water containing a small excess of chlorine, particularly when the temperature is low, has a slight odor when first drawn from the tap, but this rapidly disappears upon exposure to the air. In waters containing chlorine in excess of the amount necessary for sterilization purposes, both taste and odor exist. Tea made from such water will have a most objectionable taste, due to the action of the chlorine on the extractive matter present. As is the case when phenol is present, it is possible that some similar chemical compound is formed by the combination of chlorine and tannin.

Chlorine Absorption Standards

The chlorine absorption method as suggested by Wolman is very practical, and as several observers have reported the elimination of taste since using this system, it would seem well worthy of adoption. In Toronto the establishment of color standards was found to greatly reduce the chlorinous taste. The dosage necessary for sterilization purposes was worked out, and the blue color produced by definite doses of chlorine in the presence of starch and iodide was matched artificially. By making up color standards numbered 1 to 5, and establishing the fact that colors 3 to 5 were sufficient to sterilize the water under varying conditions, chlorine operators were instructed to keep their dosage within these color ranges.

This is not put forward as a solution for taste elimination. Since its adoption in Toronto, however, the number of complaints have been greatly lessened. The colors do not represent any definite quantity of applied chlorine, but, generally speaking, colors 3 to 5 represent approximately an application of .175 to .225 parts per million of chlorine with a water temperature ranging between 33° and 45° F. As the water warms, chlorine is absorbed more rapidly, and with a temperature of 68° F. it may be necessary to apply .375 parts of chlorine to maintain a color of 3 to 4. The organic content and temperature of the water will be found to practically control the rate of chlorine absorption. The formula for preparing the color standards is as follows:

Standard No.	Distilled Water	.01 Per Cent Brilliant Mill Green S.	.01 Per Cent Cardinal Red J.
1.......	150 c.c.	4 c.c.	0.866 c.c.
2.......	150 c.c.	5 c.c.	1.053 c.c.
3.......	150 c.c.	6 c.c.	1.10 c.c.
4.......	150 c.c.	7 c.c.	1.15 c.c.
5.......	150 c.c.	8 c.c.	1.25 c.c.

The standards should be made up weekly, placed in china cups and protected from the light. In all taste-producing conditions there must be controlling factors, and quite often it is difficult to avoid taste without taking chances on the final quality of treated water, particularly if it is unfiltered.

Preventing and Eliminating Iodoform Taste

By far the most serious taste to overcome is the iodoform one, because when the taste has once developed, its elimination is difficult. Generally speaking, water which tastes after treatment with chlorine improves on storage, but when the iodoform taste is present, it steadily deteriorates, and should it warm up, a chemical odor can be detected. In connection with the production of this taste, Houston's remarks as recorded in his 15th Annual Report are of considerable interest. He states:

"Experience has indicated that the iodoform taste can practically always be removed or prevented, either by increasing the dose of chlorine sufficiently, or by adding potassium permanganates as well as chlorine to the water. In the former event, the excess of chlorine may have to be removed by dechlorination (using a solution of sulphurous acid gas, sodium sulphite, bisulphite, or thiosulphate) and in the latter case it is desirable to remove the precipitate of manganese oxide. The permanganate can be used before, at the same time as, or after, the addition of chlorine, that is, it can be used either to prevent the occurrence of the iodoform taste, or to remove it after it has already developed. Similarly, the whole of the superdose of chlorine may be added to the water at one time, or more chlorine may be added to overcome an iodoform taste which has already occurred in a chlorinated water. Enormous doses of chlorine (one in 11,000) may be added to water and the taste of chlorine entirely removed by the use of a suitable anti-chlor (dechlorination). When, however, the chlorinated water has developed the iodoform taste, dechlorination is powerless to remove it."

One of the most important observations made was that when dealing with filtered water, chlorine or permanganate could be used before, or after, filtration, or chlorine added before, and the permanganate after, filtration, but the addition of permanganate before and the chlorine after invariably produced an iodoform taste. The experiments as conducted by Houston usually involved several hours' contact, and in this country this condition is difficult, the water quite often passing into supply almost immediately after treatment. This, of course, does not apply to cities where the supply emanates from impounding reservoirs or where the works are located outside the city limits. The cause of the iodoform taste has been the subject of extensive research, and the city of Milwaukee is credited with being the first to demonstrate the relationship of phenols and chlorine to the production of taste.

During the last few years in Toronto, extensive investigations have been made upon taste-producing conditions. Numerous hypotheses have been advanced from time to time, and have included the microscopic content, the biological content, the formation of chloramines, and latterly the formation of chloro-phenolic compounds. The connection between the microscopic and biological content and iodoform taste has not been demonstrated, although when taste does develop, there is often a pronounced increase in both conditions in the raw water. Similarly, abnormally high free ammonia has periodically occurred at these times, and the formation of chloramines has been suggested. This latter compound of ammonia and chlorine does actually produce an objectionable taste and smell when occurring under pollution conditions. Curiously enough, when chloramine is used as a sterilizing reagent, no taste occurs.

Assuming that the excess chlorine treatment could be successfully applied to most supplies where tastes and odors occur, the problem narrows down to one involving the determination of the amount of chlorine necessary, and the subsequent removal of excess chlorine according to the Toronto experiments. Where aeration is possible, dechlorination would in most cases be unnecessary. This would, of course, be dependent upon the amount of chlorine originally applied and absorbed. Radical changes such as excess chlorine treatment involves will necessarily alter certain operating conditions, chief among which must be regarded the filtration and sterilization processes. In connection with these, excess chlorine taste and odor could be largely removed, without affecting the quality of the effluent, by chlorination prior to filtration. Filters of any kind have remarkable chlorine absorption powers, due in part to their retention of organic matter. For various reasons engineers do not favor this practise, but the writer sees no reason, particularly where mechanical plants are involved, why chlorine could not be applied to the water after sedimentation and prior to its passage through the filters. This of course would apply only at times when the excess chlorine system was in use for relieving taste conditions.

At Toronto, chlorination prior to filtration has been found to work efficiently and give satisfactory results. No attempt has yet been made to use excess chlorine treatment. This matter is at present under consideration and will in all probability be tried out this summer. Laboratory experiments have, however, demonstrated that filtration does decrease the iodoform taste, and if the application of chlorine be so controlled that this taste is not allowed to develop, there should be no reason why the chlorinous taste could not be greatly removed by application before filtration. The removal of excess chlorine by chemical reagents depends entirely upon local conditions. If the location of the plant, the general engineering considerations, and the quality of the water are favorable, there is no reason why this system could not be undertaken, always bearing in mind that technical supervision is essential. The success of the treatments has been demonstrated in England by Houston.

Recently the removal of the iodoform taste by excess lime has been tried in Toronto, and while the experiments are not yet sufficiently advanced, preliminary observations are not very favorable. It was found, however, that the taste was reduced, but not eliminated, when using large quantities of lime. The combination of the characteristic taste produced by excess lime in water, together with the iodoform taste, rather masked the true taste, and three separate observers were able to detect the iodoform taste after a 20-hour contact period. When water treated with chlorine, phenol and lime and having a doubtful taste was passed through a rapid sand filter, a pronounced iodoform taste resulted, thus confirming the opinion previously expressed, that lime only masked the iodoform taste. Taste occurring in the treated water at temperature of 60 degrees was less pronounced than at 45 degrees F.

The experiments conducted by the Milwaukee Sewerage Commission under Hatton and Copeland and described in the 7th Annual Report of the Commission are of particular interest. Ammonia condensation liquor was found to contain as much as .144 per cent of phenol (carbolic acid). In the experiments made, ammonia condensation liquor containing .078 per cent of phenol and other taste-producing compounds showed that one part of the liquor produced a taste in 40,000 parts of chlorinated Lake Michigan water. The ammonia condensation liquor was added to sewerage entering the aeration tank in quantities ranging between 0.8 and 9.1 per cent of the sewage flow. No taste of consequence was discovered in the effluent except on one or two occasions. At such times the taste was so slight that, when the effluent was diluted with lake water, no taste could be noticed in the diluted sanple. Conclusions arrived at were, that under warm weather conditions the activated sludge process of sewage purification will remove the carbolic acid taste in sewage which contained ammonia condensation liquor equal to 2 per cent of the sewage flow. For that reason it is concluded that the sewage disposal plant should protect the water-supply from taste produced by ammonia condensation liquors discharged into the sewers. The absence of taste in many cities during the summer months might also be linked up with this condition, as where industrial wastes are discharged into sewerage systems, marked seasonal biological activity occurs, which may have much to do with taste prevention.

Rudolph Thompson, Assistant Chemist of the Toronto Filtration Laboratory, has been closely associated with the writer in the whole of the investigations recently made in connection with the occurrence of taste in chlorinated water. In conclusion, the writer is strongly of opinion that if industrial wastes are the real cause of taste occurring in chlorinated water, the best and surest remedy would be the prevention of stream pollution. In some states and provinces laws are in existence which, if enforced, would put an end to the discharge of obnoxious wastes into streams from which public water-supplies are drawn. It seems only just that the onus should be placed upon the manufacturers, and it is hoped that if the existing laws cannot be enforced, future provision will be made whereby the burden of preventing stream pollution will be placed upon those directly responsible.

Acknowledgment:—From a paper read at the annual convention of the American Water Works Association, May, 1922.

Save the Useful and Ornamental Roadside Trees

In the cleaning up of a roadside, better save the young trees. Even if we save too many, they are producing useful wood and the surplus can be cut any time. Let us save such attractive flowering trees as the thorn-apple, the dogwood, redbud and shadbush, and such shrubs and vines as the red osier, witch-hazel, wild rose, sweet-fern, meadowsweet, clematis, bittersweet, wild grape and woodbine, and even the elder and sumac. If we realize that all these plants are grown in great quantities in nurseries and used for ornamental planting in parks and private grounds, we shall see that they have value, and surely it is unreasonable to destroy such plants and at the same time provide for other planting.

—Charles F. Boehler, Landscape Engineer, Michigan State Highway Department.

Problems in the Reforestation of Watersheds---Part II

By George R. Taylor

Chemist and Bacteriologist, Scranton Gas and Water Company, Scranton, Pa.

THE species of trees which should be planted are, first of all, those which are native to your particular section. In addition, experimental planting should be made of various other trees which may seem desirable. Planting should not be confined to a single species, any more than you should put all your eggs into one basket. Consideration should also be given to future utilization of the timber. A water system can make more use of the softwoods than of the hardwoods. With us the prevailing types of trees are the hardwoods, such as maple, oak, beech, and birch, so there has been no necessity to plant them. In selecting a species for a given tract, consideration must be given to the nature of the ground—swampy or dry, sheltered or exposed, whether open or covered with undergrowth, type of soil, and various other factors.

The following table will give the habitats of the principal softwoods of the eastern section:

Species	Soil	Shade
White pine, P. Strobus	Moist to moderately dry	Very tolerant
Pitch pine, P. Rigida	Drier soils	Will stand some shade
Red pine, P. Resinosa	Moist to dry soil	Will stand some shade
Norway spruce, Picea Abies	Moist to swampy soil	Intolerant of shade
European larch, Larix	Gravelly soils	Intolerant of shade
Scotch pine, P. Sylvestris	Anything except swamp	Intolerant of shade
Austrian pine, P. Laricio	Dry to moist soils	Intolerant of shade

If you are fortunate enough to have old fields available for planting, you can put in almost any species you wish and get satisfactory results. If you are planting old fire burns covered with sweet fern, briers, tangles of scrub oak and groves of poplar, fire cherry and gray birch with an occasional oak or maple thrusting its green crown up above the tangle to belie its fire-scarred trunk, you are practically limited to white pine on the drier tracts and either white pine or Norway spruce in the wetter locations. We have been trying pitch pine, P. Rigida, in places of moderate shade, but have not had enough years of experience to determine how satisfactory it is going to be. White pine and Norway spruce are shade-loving and will eventually find their way up through scrub oak and other low-growing bushes. The trees obtained for planting are seedlings from one to three years old and four to ten inches in height. They may be bought from private nurseries, as were our earlier plantings.

Of recent years the Pennsylvania Department of Forestry has furnished forest trees free to planters, making a charge to cover the cost of digging, packing and transportation. A number of other state forestry departments are doing the same thing, and it is an activity which water-works people should urge in all states. Pennsylvania this year is sending out 4,000,000 seedlings; next year they expect 6,000,000, and in 1924 and thereafter they expect to have 20,000,000. The trees are bunched in fifties, boxed and shipped by express. Immediately upon receipt they should be inspected and "heeled in" in the ground. To heel in, a furrow about 4 inches deep should be plowed in good soil which is reasonably free from stone. The bunches should be put in this furrow and the dirt packed back about the roots, covering the stems in part. The row should not be more than two bunches wide to avoid heating. If the ground is partially shaded, so much the better. Heeled in in this way, trees can be kept in perfect safety for two weeks during March and April.

We plant the trees from 4 to 6 feet apart, generally about 4 feet. The latter distance means 2,700 trees to the acre, while 6 feet requires 1,200 trees per acre. We make the holes with broad-bladed picks known as mattocks. Following the pick men, come the droppers, carrying the trees in pails having a little water in them to keep the trees moist. One man will drop for two to three rows of pick men. Behind these come the men who actually plant the trees, one man to each row. The planting is very simple. Just stick the tree in the hole and scrape the dirt back in with the hand, a scraper, or, as some of our men seem to prefer, a small stone. This stone is then used to pack the dirt around the tree by striking the ground with it. Another way to firm the tree in is to step on the dirt that has been thrown back into the hole. This firming-in process is very essential in tree planting. The imperative precaution to be taken in handling is the same as that for transplanting all trees—do not let the roots dry out. Bunches must not be left around to be exposed to the sun or air, and the work should be so handled that those covering the trees keep well up with those dropping them. To mark the planting line, the outside line of holes should be left unplanted on each trip across the piece of land being planted. If the planting site is at a distance from the place where they are heeled in, enough trees for the day's work should be brought up and heeled in at a convenient spot. In old mowing land where the land is smooth, it may be found advantageous to plow shallow furrows to facilitate planting, although we have always stuck to hand planting. Where the ground is favorable, a force of men will put in 1,200 to 1,500 trees per man a day. In wild land covered with scrub oak and briers the average may drop to 500 trees a day. The total cost of the trees in the ground, including the department charges for digging, expressage, and our labor for planting, will run from $3 to $5 per 1,000 trees.

Trees should be planted as early in the spring as the ground is workable. Trees planted in March and early April do very much better than trees set in May, as the earlier trees get rooted before the hot weather of July scorches them. Many failures are traceable to late planting, and even if they survive they remain in a stunted condition for some years before making a start. After planting, little need be done for the trees except to keep out fires. In later years will come questions of thinning and utilization of the smaller trees in the tracts which are being overgrown. These questions have not come up with us as yet. One method of planting which has been tried in some instances is to plant the alternate rows to evergreens suitable for Christmas trees. In a few years these could be removed and sold, thus giving an early income from the area. The feasibility of this is debatable, and we have never practised it. The mixed planting of trees has certain advantages over planting in pure stands. One important thing is that it tends to cut down damage due to disease.

We began our planting in 1912, putting out 80,000 white pine. We continued planting pine at intervals until 1918, when we began experimental plantings of different species. We have now put in 985,000 trees, of which 513,000 are white pine. We have tried Scotch pine, red pine, pitch pine, European larch, Norway spruce, white ash, and black walnut. The results have been somewhat varied in character. Some have been unqualified successes, others are as yet uncertain. By far the greater part of the trees have lived, although in some instances the growth has been very slow. Scotch pine has not grown very rapidly with us, contrary to general experience. The pitch pine plantings have been too recent to form any definite idea, but as it is a local tree there is no reason why it should not succeed if the particular site is favorable. European larch has been a complete failure with us, both in growth and in withstanding our severe winters. One planting has only 5 per cent of the trees living; another under different soil and exposure conditions has 40 per cent living; while a third is somewhat between the two. Norway spruce has given us 90 per cent living, but the seedlings do not grow. Some that were set out in 1918 have not grown more than 6 inches in that time. White ash was a complete failure with us, as was also the planting of black walnut nuts. Red pine has been a great success with us so far. Practically 100 per cent of the trees have lived, and the growth has been very satisfactory. We find, however, that they are very intolerant of shade. In one field there is a large patch of sweet fern, covering nearly an acre. The red pine will not come up through this, but either dies or stands still without making any growth. We plan to use red pine and pitch pine in the near future wherever it is possible. Yet, because of scrub growth already existing, probably 90 per cent of our land must either be planted to white pine or allowed to go through the slow and frequently unsatisfactory process of natural regeneration. Pitch pine and red pine are moderately resistant to fire, owing to the large amount of pitch in the bark. Pitch pine, in particular, will live through surface fires which kill all other trees.

Tree Diseases

The problems of tree diseases are becoming more and more pressing every year. We are only too familiar with the ravages of the chestnut blight and the resultant wiping out of the chestnut tree. The various scales attack some of our forest trees, causing considerable damage. White ash is particularly affected by it, and in our own section ash sprouts are being killed by scale to an alarming degree if one considers the relative scarcity of the trees and their high value for lumber. White pine is attacked by the weevil, occasionally to such an extent as practically to destroy a plantation. The weevil is a white grub which bores the pith of the leader, killing it. The tree is thus forced to make one of the lateral branches into a leader, in this way producing a crook. Usually the infection is not heavy enough to cause any more serious damage than this. The ravages of the gypsy and brown tail moths in New England are well known. All of those except the weevil were imported. The most serious importation of all is the white pine blister rust, which was brought into New England on imported white pine seedlings, some twenty years ago. The disease has spread slowly over the North until it is pretty well distributed over the white pine territory and threatens to wipe out the white pine tree as the chestnut blight has the chestnut.

White pine blister rust is an infection of the inner bark of young branches of white pines, which slowly travels down the trunk and eventually kills the tree. The life-cycle of the rust is in three stages, the first two stages of which are passed on white pine, while the third stage is passed on members of the Ribes family, that is, currants and gooseberries, either wild or cultivated. Its first stage on the pine is the dormant stage, which lasts from two to four years before passing into the second, or active, stage. In this stage the bark is killed in the center of the infection, and toward the outer portion of the infection spores are produced. At the extreme edge mycelium threads extend the disease farther down the limb into the trunk bark. When the infection reaches the trunk, the killing of the whole tree takes place rapidly. The spores produced in the active stage on the pine can grow only on leaves of members of the Ribes family, i.e., currants and gooseberries, either wild or cultivated. In the third stage on Ribes, spores are produced which will develop only on members of the five-needled group of pines, the principal of which is white pine. Here it begins its life-history over again.

A FIELD OF 100,000 WHITE PINE SET OUT IN 1915

It is evident that this rust will develop and spread only in those sections where both white pine and Ribes are present. It is thus possible to grow either one of the two in a given district, but not both. An infected white pine does not directly infect the white pine which stands beside it, but the spores must pass from the diseased tree to some currant bush. New spores must be formed, and these pass back to the sound pine tree. The spores which are formed on the pine tree are of high vitality and may be transmitted over long distances by the wind, animals, birds, moving vehicles and other agencies. The spores which are formed on the Ribes plant are frail and of low vitality, so they are carried only relatively short distances. We are thus finding, rather unexpectedly perhaps, that currants and gooseberries are becoming infected over wide areas which were supposed to be free from the disease, but that the infection of the white pines is taking place more slowly and over more limited areas. From 100 to 600 yards may be set as the limiting distances over which infection of the pines from diseased Ribes may take place, with 200 yards representing the maximum, except under extremely favorable conditions.

It will be seen that we are not facing wholesale slaughter of the pines, as was the case with the chestnut tree. The fact that the disease does not spread from tree to tree makes its progress slower and, furthermore, makes the possibility of its control much more certain. Control of the white pine blister seems possible through extermination of all gooseberries and currants which are within two hundred yards of a given stand of white pines. At first thought this may seem prohibitive in its cost, but work which has been done in New England and New York indicates that on many tracts the costs are very reasonable.

You naturally ask, why plant white pine at all under these conditions? There are several reasons why we should continue to plant white pine if there is any possible chance of success: first, there is no tree which produces timber of the quality of white pine; second, white pine will thrive under a greater variety of conditions as to soil and moisture than most other trees; third, no other softwood except spruce can be planted in thick growths such as birch, poplar and scrub oak with any surety of the plantation's growing up through the scrub. In our opinion there is no other tree possessing the merits of white pine for general forest planting, and we are loath to give it up without a struggle. As to substitutes, there are no substitutes. Red pine seems the most satisfactory one to try. It is hardy, a rapid grower, makes good lumber, and is not subject to any known disease, but has the fatal defect, for us, at any rate, that it cannot be depended upon to come up through growth of underbrush; its use must be restricted to fairly open ground. In this respect it is similar to Scotch and Austrian pine and the larches. The spruces will endure shade, but are not very satisfactory for planting in the drier soils.

Tree diseases have made more complicated the problems of natural regeneration as well as those of planting. They have also brought up the question of the utilization of the dead and dying trees in the already existing stands.

We are operating a small portable sawmill, utilizing first of all the dead chestnut and other timber and, in addition, taking out mature specimens of all trees for which we have use. We saw our own rough construction material, together with such specialties as pipe blocks, stone boat, ties, wagon poles, fence posts and a variety of plank and timber. Much of this utilization work has been a direct result of the ravages of the chestnut tree blight. A considerable quantity has been sold as mine props, either on the stump or at the mine. Our own cuttings have been carried out in as careful a manner as possible, all brush has been burned, and in many cases the small chestnut sprouts have been removed to lessen the fire hazard and improve the general condition of the woods. We are sawing about 75,000 board feet of lumber every winter and 10,000 to 15,000 pipe blocks. Firewood, except high grade fireplace wood, has no value in the anthracite region, so everything below log size must be burned. The cost of operation is necessarily high, as we are picking the cut out of the general forest growth. However, we have been able to produce lumber at approximately local cost price when engaged on straight lumbering work. We feel that we have further done a valuable work by removing dead and dying timber which was rapidly becoming a serious fire menace. There is another factor to be considered here, and that is the constant employment furnished the men. This is of great value in lessening seasonal unemployment.

Summary

First, fire protection is the Alpha and Omega of reforestation. Without it all attempts are useless.

Second, plant the varieties which are native to your section and which will furnish the lumber you desire. Experiment with such other varieties as give promise of success.

Third, keep a constant watch for tree diseases. Cooperate in any way with the various state and national agencies which are endeavoring to combat by quarantines and various wars of extermination the microscopic enemies of forest life.

Fourth, utilize the existing timber which you already have.

Finally, regard reforestation as a necessary water-works policy, not merely because of its possible economic value, but on the broader grounds of sanitary control, greater stability of run-off, and conservation of the timber resources of the nation. We should feel it a duty to recreate "Penn's Woods," that our children's children may derive their water-supplies, in part at least, from the fair green forests of our forefathers.

Acknowledgment.—From a paper read at the convention of the American Water Works Association, Philadelphia, Pa., 1922.

The Social Menace of the Rat

By C. V. Craster, M. D.
Health Officer, Newark, N. J.

Although there are two main species of rats, the black and the brown, the brown rat, often mistakenly called the Norwegian rat, is by far the most numerous and important. The brown rat is really a native of China, and his world-wide distribution is the result of successive waves of invasion westward across Europe and finally in merchant ships to America and the Antipodes. Until the year 1727 the black rat lived unmolested in Europe, in which year it is recorded that numerous swarms of brown rats were observed swimming across the River Volga. The reason for the invasion of this rat from Asia was probably the need for a new food supply for the rapidly increasing rat population.

Larger, fiercer and more omnivorous than the black rat, it quickly established itself in Europe and the British Isles, slaying, devouring and driving the more gentle black rat before it until the latter leads a precarious and uncertain tenure of life in places where the brown rat cannot reach it. Many stories are told of the fierce and ruthless character of the brown rat. Although a herbivorous animal, it will eat anything, and when hard pressed for food readily devours its kind.

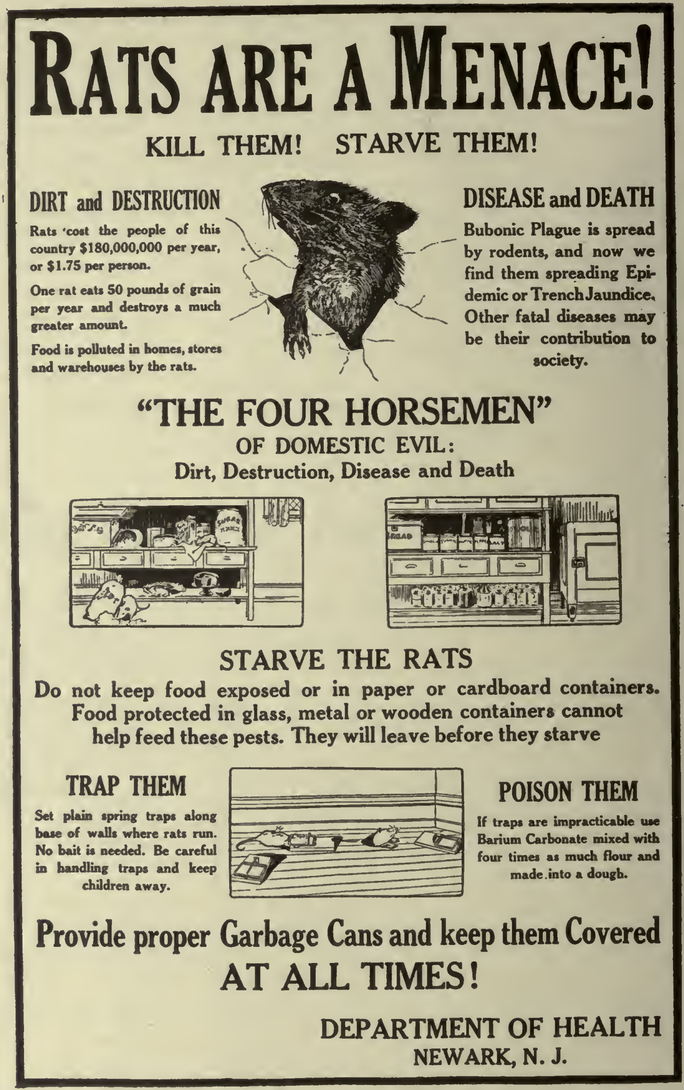
It is extremely prolific and the rate of increase depends only upon the opportunity for an abundant food supply. When forced by starvation rats will migrate in immense troops in search of food. These migrating hordes are reported from time to time from all parts of the world.

There is also an annual migration of these animals from the cities to the countryside farms and lanes, attracted by the green food and the presence of smaller game. A return to the cities takes place in the fall, when the outside food supply fails.

There is no human foodstuff that the rat will not eat readily and its voracity is extraordinary. Not only is the loss of foodstuff for rat sustenance great, but the accompanying destruction of food supplies reaches enormous proportions. Not only are foodstuffs of all kinds ruined, but great damage is done to property by the destruction of woodwork, masonry and plumbing. It is estimated that the total cost for our rat population amounts to $180,000,000 per year, or $1.80 per person in this country, and it is calculated that the loss involved represents the constant effort of more than 200,000 men to produce the materials consumed and destroyed by rats. It is difficult to estimate the rat population in America, but it is conservative to say there are two or three rats to every person in North America. According to Lantz of the U. S. Bureau of Biological Survey,

> "The destruction wrought by this vast horde of rodents is far greater than that wrought by lions, tigers, wolves and all other noxious mammals together. The damage done by any species of insect is usually confined to certain geographic limits rarely extending over large parts of a continent; that done by the rat extends over the whole world."

Not alone from the side of food and property damage is the rat a menace to man, but also from the hazards of disease transmission. The relation of the rat to public health was not suspected until twenty years ago, when the Indian Plague Commission showed that plague was communicated by means of the rat infected with the disease and by the rat flea which left the body of the animal dead of the disease and by means of its bite brought about infection of human beings. It was clearly shown that in all plague epidemics there are existing or preceding epidemics of the disease among the rat population.



RATS ARE A MENACE!

KILL THEM! STARVE THEM!

DIRT and DESTRUCTION

Rats cost the people of this country $180,000,000 per year, or $1.75 per person.

One rat eats 50 pounds of grain per year and destroys a much greater amount.

Food is polluted in homes, stores and warehouses by the rats.

DISEASE and DEATH

Bubonic Plague is spread by rodents, and now we find them spreading Epidemic or Trench Jaundice. Other fatal diseases may be their contribution to society.

"THE FOUR HORSEMEN"
OF DOMESTIC EVIL:
Dirt, Destruction, Disease and Death

STARVE THE RATS

Do not keep food exposed or in paper or cardboard containers. Food protected in glass, metal or wooden containers cannot help feed these pests. They will leave before they starve

TRAP THEM

Set plain spring traps along base of walls where rats run. No bait is needed. Be careful in handling traps and keep children away.

POISON THEM

If traps are impracticable use Barium Carbonate mixed with four times as much flour and made into a dough.

Provide proper Garbage Cans and keep them Covered
AT ALL TIMES!

DEPARTMENT OF HEALTH
NEWARK, N. J.

NEWARK, N. J., USES THIS WARNING POSTER

Carriers of Disease

The role of the rat in bringing about bubonic plague having been thus firmly established, it is evident that historically it is responsible for more human deaths than all the wars known to humanity. The great plagues of the Middle Ages are now recognized as being bubonic plague. The Black Death which swept across Europe during the fourteenth century was a rat-borne plague, and was responsible for the death of over 25,000,000 persons. In India, the endemic home of plague, many thousands of persons die annually from this disease.

Rats transmit other diseases besides plague, notably trichinosis and various tapeworms. More recently it has been established that the rodent is responsible for the transmission of epidemic jaundice or Weil's disease. The infection was common among the troops during the World War and was a consequence of the enormous number of rats that existed in the trenches and dugouts and that carried the infection by contaminating food and food utensils. Epidemic jaundice has been reported from several states of the Union, especially the New England States and New Jersey. An inquiry sent out recently to the physicians of Newark revealed the existence of 90 cases of epidemic jaundice which had been under treatment in three months. It is probable that this number represents only a small proportion of the cases actually existing.

There is then every reason to call for a war against the rat, not alone by reason of the vast economic loss it causes, but because it is the inciter of disease, pestilence and death.

Exterminate the Rat

Although it is virtually impossible to exterminate the rat, steps can be taken for its suppression which will have far-reaching results. The main points of attack are the rat's habitation and its food supply. There is a vital need for the rat-proofing of warehouses and stores and the proper protection of foodstuffs, so that the rat cannot gain admittance to such supplies.

A building can be made rat-proof, and indeed a whole city may be rendered rat-free if a proper warfare against the pest is carried out. Rats will not thrive where there is not an abundant food supply. Once cut this off, and there must be a migration to more suitable locations. Rats may be destroyed by three methods—traps, poison and bacterial virus. Of these, the first is probably the most efficient if properly carried out.

To properly destroy rats it is necessary to know their habits and outwit them. A rat will seldom run across an open space, preferring to run close to a wall. They are cunning and cautious and avoid anything that looks suspicious. They are, however, very curious and will readily enter lengths of pipe and explore dark corners.

The best form of trap is the ordinary spring or guillotine trap, which can be bought for ten or fifteen cents. It is better to use the traps unbaited, as rats are suspicious of baited traps, but readily step on an unbaited one if properly placed. Set several traps along the sides of rooms or the footing of walls. They may be set in a semi-circle around a rat-hole or one after another along a rat-run. It is better to run six or seven than two or three. It is just as well not to attempt to close the rat-holes, because they will soon find other ways of entrance unless the building is properly rat-proofed. Diligent trap-setting will quickly exterminate all rats in a building.

There are many rat poisons on the market, with many and various claims made. Barium carbonate is one of the best of these, made up with flour in the proportion of one to four into a thick paste. The objection to the poison method is the possible nuisance of the dead rat on the premises. The viruses cause similar objections in spite of the fact that claims are made that the animal will come into the open to die. Whatever method of destruction is adopted, it should be persisted in until success is assured. "Man," says Lantz, "has been fighting the rat for centuries and has made little progress. The rodents are entrenched in fortresses of man's own building. If they are driven out or overcome for a time, others soon swarm from neighboring premises and the battle has to begin anew. The work has been made abortive by providing continued subsistence for the rodents and by failing to destroy their entrenchments."

There can be no question of the need of a united and constant campaign to eliminate the rat menace. Rat-proof building should be the requirement for our dwellings; rat-proof food supplies in our warehouses and stores. The open garbage bucket in the house and the improper care of offal in slaughter-houses and meat stores are constant reserves of food supply for the rat. He will remain only as long as his food supply lasts. Like his fellow pest the house-fly, his existence depends upon the careless habits and indifference of the average individual. It is indeed time that the rat be no longer tolerated in well-kept cities.

Philadelphia Builds 94 Miles of New Streets

During the past two years the city of Philadelphia has paved 75 miles of streets, and it is rapidly completing 19.5 miles more. The additional 19.5 miles will be laid on 140 streets and avenues in various sections of the city. Broad Street, Philadelphia, has long been recognized as one of the finest asphalt streets in the country. According to F. C. Dunlap, Chief of the Philadelphia Bureau of Highways, analyses of all the city's sheet asphalt pavement indicated that more than 50 per cent is over 15 years of age, and in view of many such records and the city's experience with other types of construction, the Bureau has adopted sheet asphalt and granite block as standards for the most heavily traveled streets.

Is the Road Surface the Proper Place for Direction Signs?

By George H. Nye

City Engineer, New Bedford, Mass.

Editorial Note.—*In submitting the following article for publication in* The American City, *Mr. Nye expresses the hope that the methods used in New Bedford may be criticized by those having experience with traffic regulation in other cities. The editors will welcome such comments for publication in a future issue, and especially on the question of whether public safety is promoted by expecting drivers of automobiles to read direction signs on the street surface.*

NEW BEDFORD, MASS., with about 130,000 population, is a very old city, as cities go, in this country, and the streets in the central or older section are mostly 40 feet in width with 8-foot sidewalks and 8-foot-radius corner curbs. The blocks are short and the buildings close to the street line.

The effect of this on automobile traffic is to create numerous dangerous crossings, with obstructed views, narrow roadways, and much passing.

In 1921 a considerable number of silent policemen or dummy cops were purchased and placed at the worst of these crossings. The autoists said the dummies were an actual obstruction to traffic and had no right in the street. No better method of regulating traffic was known, however, for it was too expensive to maintain regular traffic officers on the 90 or more corners where regulation was desirable.

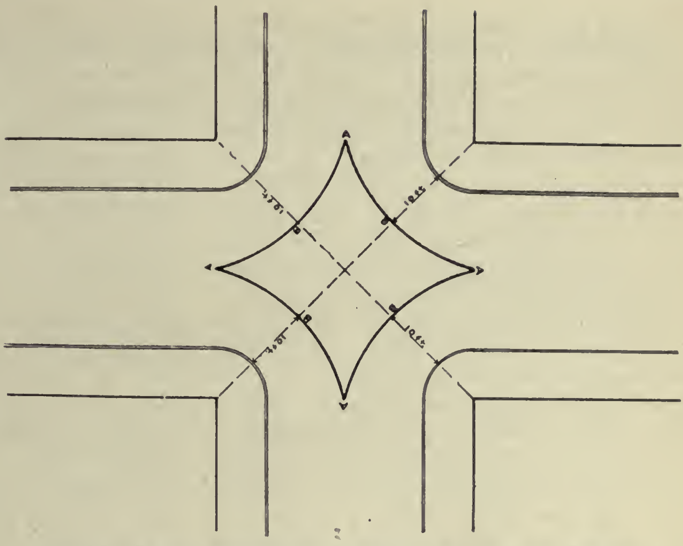
The Mayor, Walter H. B. Remington, then took a hand and directed the City Engineer to study the traffic problem in general and report to him some method of regulating without obstructing or endangering the traffic. This was a subject in which I was already deeply interested, as I had been impressed with the methods recently adopted by the Massachusetts Highway Commission, of painting guiding marks and symbols on the surface of the road. I firmly believe that the surface of the road, which the driver of a car should be watching at all times, day or night, is the proper place for signs.

As all motorists know, it is easy enough to find one's way over the main roads in the open country, but easy to lose it in the cities and towns when, even if sign-posts are located quickly by a driver, there is no opportunity to read them while driving a car through traffic. I reported to the Mayor that I thought a satisfactory method of marking our streets on the surface could be worked out, covering both the use of the street and the guidance of strangers through the city by the best routes.

The Board of Aldermen ordered the City Engineer, Superintendent of Streets, and Chief of Police to have the streets marked by painted lines, words and symbols on the surface in such manner as should be approved by the Mayor.

The method used was as follows: Each corner was considered as to its use, and the lines were so marked as to allow motorists to travel where they most desired, if it could be done with safety, thus following the lines of least resistance and reducing the tendency to violate regulations. For this purpose the intersections were considered as a series of traffic lanes and not as a geometrical figure.

Taking our hardest situation—that of the intersection of two 40-foot streets with 8-foot sidewalks, 8-foot-radius corner curbs, and 24-foot roadways, the following method was pursued: First, the points "A" were determined at the middle of one street on the side of the other; then the points "B" were marked on the diagonals, allowing just room enough from the curb corner for one traffic lane to care for cars making the right turn, which naturally desire to keep as far to the right as possible. The minimum width of this lane was made 10 feet in case of 40-foot streets, 11 feet in case of 50-foot streets, and 12 feet in case of wide streets. A circle passing through two of the "A" points and one "B" point was found to have a radius of about 27.5 feet, or a turning circle of 55 feet diameter for



TRAFFIC LANES MARKED ON NEW BEDFORD'S PAVEMENT

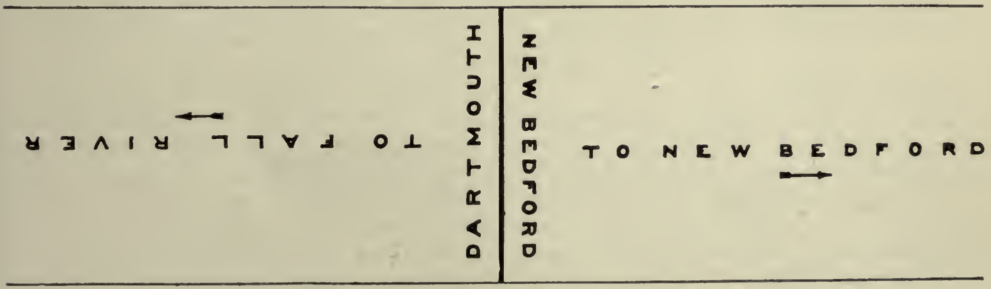
a car to make, with the further advantage that a car approaching or leaving a point "A" could go further to the left and enter the circle partly turned and with a space beyond the second point "A" to complete the turn, being required to keep within the safety line only during that part of the turn where the view was obstructed.

This arrangement leaves the maximum amount of room possible for the use of the car making the left turn, instead of wasting valuable space in the street by passing the geometrical center before starting the turn. These lines have proved so easy to follow that the public is both pleased and surprised and we have received many favorable comments.

In regard to the direction markings, I can only describe our own case. One main road enters from the north and passes over four miles of city blocks to the center. Another route is from the center to the small towns and shore resorts to the south of the city, and a third line passes through the center of the city leading from the cities west of New Bedford to Cape Cod on the east.

We chose for routes for strangers practically the routes given in the automobile road books, and for a designating color the same color used by the state in marking these through routes. At the city line on each of these routes we have marked the name of the city or town on either side of a broad white line representing the town line. A short distance from the town line, with the top of the letters on the center line of the street, we have printed the words "To New Bedford" or "to . . . . [the other city]," running longitudinally with the road and faced so as to be easily read by the driver on the left side of the car. Under the direction sign is a long arrow of the appropriate color.

Beyond the direction sign is a series of arrows of the same color as the first, placed at sufficiently frequent intervals to give a stranger confidence, and showing all the turns to the center of the city. At the center of the city between the hotel and the Post Office and at the intersection of the north-and-south routes with the east-and-west routes, is a zero or initial point with signs and arrows for all four directions.



THE PAVEMENT IS THE SIGN-BOARD

The sketch on page 435 shows the marking at the northerly line and is typical of all.

Great care was taken to keep the warning signs to the minimum number, to make the markings with the fewest words possible, and to make the utmost use of the symbol of the colored arrow, which can be noted at a glance. The direction letters are white on asphalt and are made with 4-inch lines, are about 15 inches in height, and spaced about 3 feet apart.

Another innovation for this city, introduced by the Superintendent of Streets, Horace Borden, is the marking of the street names in white paint and good-sized letters on the vertical face of the curb in such a position that the driver of a car can always locate the names of cross-streets by looking at the face of the curb on the further right-hand corner of the street which he is approaching. This, again, enables a driver to locate his signs in traffic while still keeping his eyes on the road, and he is not obliged to look for a sign that may be on a pole, street lamp or building on any one of four corners. They are also in the circle of his headlights at night.

Another great advantage in painting signs on the street surface is that the city absolutely controls the surface and can prevent any but official markings from being placed thereon. The drivers will soon learn that here is the place to look for directions, and helpful directions only. How many of us when driving in traffic have held up at an official-looking sign which says, "*Stop!* Go to Smith's for fried clams." The elimination of such advertising on trees, poles, fences, etc., will be a great help to drivers and a not wholly regrettable loss.

While there is some criticism from those who believe this is all wrong because it was never done before, and that a sign is some sort of a pole fruit because they always did grow on poles or buildings, I believe we have something good, and the majority of the comment by the users of our streets confirms this opinion.

Road Demonstration at State Fair

Urban and Rural Visitors are Shown a Practical Method of Building and Maintaining Secondary Roads

TO demonstrate a practical method of constructing and maintaining the secondary roads of the state, the New Jersey State Highway Department has this year employed a novel and effective plan. The Trenton Fair, which is held annually in the State Capitol, attracts thousands of people from all parts of the state, including farmers, highway contractors, road engineers and superintendents, township committeemen, and many others actually interested in highway work. In order to take advantage of the opportunity of demonstrating to this class of people an approved method of maintenance, a demonstration road was constructed.

This sample road is made of cinders from soft coal. After the cinders were dumped and spread, they were rolled with a light-tandem roller to effect as much consolidation as possible. The next step was to apply Texaco road oil, containing approximately 55 per cent of asphalt. This road oil served as a dust layer and also as a consolidation and binding medium. After the road oil was applied at the rate of one-half gallon to the square yard, the roller was again run over the entire surface.

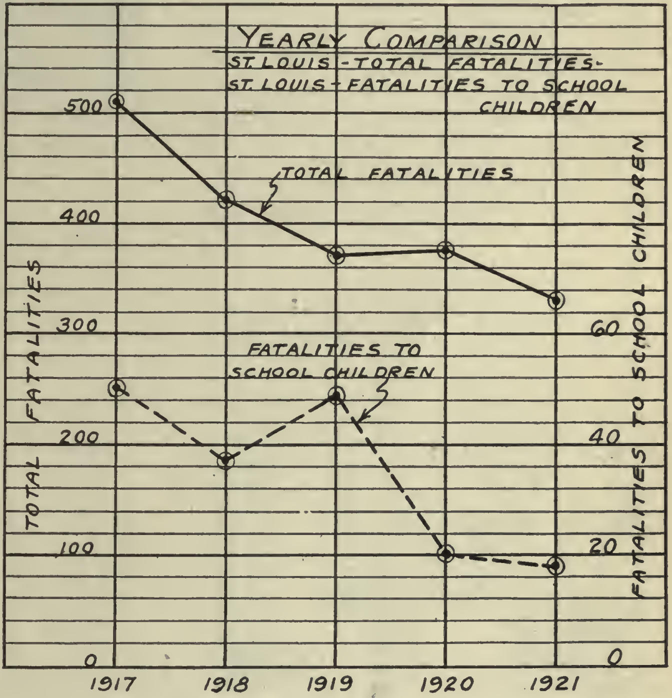
The purpose of this sample road is to show farmers, highway contractors, township committeemen, and road engineers an efficient method of building and maintaining the side roads of the state. The State Highway Department points out that such a road would not serve as a main state route, but that it demonstrates a method to be used in the all-important work of keeping side roads made of earth, sand, clay, cinders, etc., in good condition.

The use of coal cinders and asphaltic road oil as materials to form the surface of side roads has demonstrated its practicability in several different localities. The village of Southampton, L. I., has had particularly good results from this procedure. This village employs this method on bridge approaches on its side roads, and has found it to be economical and serviceable.

How the St. Louis Schools Have Reduced Accidents

By E. George Payne, Ph.D.

THE reduction of accidents is a cooperative enterprise. The success of this work in St. Louis is notable because the St. Louis Division of the National Safety Council has been able to enlist the cooperation of all the agencies in the city interested in the saving of human lives. The Council has been the clearing-house which has secured the cooperation of the courts, the city administration, the Chamber of Commerce and business interests, and the schools. The accompanying graph shows the success of this cooperative undertaking in the reduction of accidents to school children between six and sixteen years of age.



With the exception of a slight decrease in the number of deaths of school children in 1918, when work was temporarily carried on in the schools, there was no reduction of the number of children's deaths until the comprehensive plan of teaching accident prevention was introduced into the schools in December, 1919. The effective work of the Council in saving adult lives and property affected the losses to children only slightly; there was no increase in the number of children's deaths—that is all that can be said. The number averaged about 50 per year from 1910 to 1919. With the introduction of an adequate school program of accident prevention in December, 1919, the number of accidents began a constant decline, which has since continued. In contrast to 49 in 1919 and an average of 50 per year for the preceding 9 years, there were 20 deaths from accident in 1920, 16 in 1921, and, if the record continues, 1922 will show a total of only 12.

This achievement has been brought about through direct instruction as a part of the various subjects of daily study. For instance, the utilization of accident situations and occurrences as a part of oral and written composition, drawing, arithmetic, geography, history, physical training, etc., has brought positive results. Unfortunately, space does not permit me to outline in detail the method by which education in accident prevention as a regular part of the school work is carried on.

Many of the children have been organized in the schools into Safety Committees and Councils for the purpose of creating a safety consciousness. The effectiveness with which

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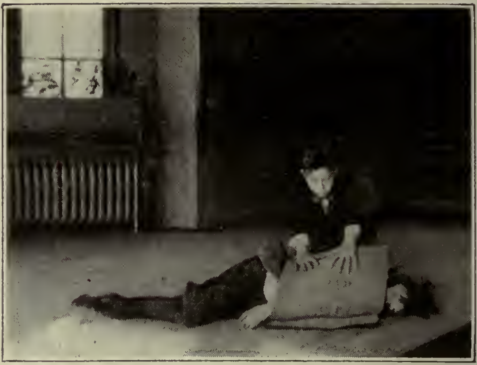
The author of this article is now Professor of Education in Health and Accident Prevention, New York University, occupying the first chair of this kind in an American university. He was formerly President of the Harris Teachers College, St. Louis, and was Professor of Education, School of Education, University of Chicago, Summer Quarter, 1922.

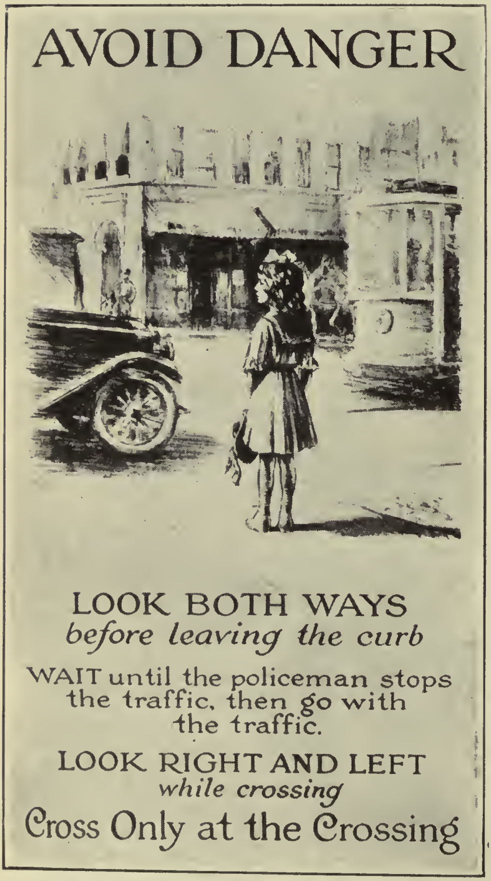
this has been accomplished is illustrated by one of many such letters received before the close of the school year in June. A word of explanation is necessary. I was present at the meeting of a group of thirty children representing the various rooms of the Meramec School. The group was enthusiastically discussing methods and ways of preventing accidents, when the incident described in the letter occurred. The letter is as follows:

Dear Mr. Payne:

I am glad that I joined the Junior Safety Council. It is a great success at the Meramec School. The Safety Council is trying to put a stop to all accidents. There was a boy who hopped trucks; we made him come to our meeting. We had a trial. Then we made him give a speech about why he hopped trucks, but he hadn't any speech. We asked him if he wanted to join the Meramec Safety Council. He did so. We put him on a committee to keep boys from hopping trucks. He couldn't very well hop them himself while he told other boys not to do so; besides, we had our eye on him. I think this will cure him from hopping trucks. Anything that we can do to help forward this movement count on the Meramec boys. I hope you will come to see us again soon.



TEACHING CHILDREN HOW TO SMOTHER FLAMES


AVOID DANGER
LOOK BOTH WAYS
before leaving the curb
WAIT until the policeman stops the traffic, then go with the traffic.
LOOK RIGHT AND LEFT
while crossing
Cross Only at the Crossing

Copyright, National Child Welfare Association

A SAFETY INSTRUCTION POSTER

Yours truly,
Howard Whaley.

The boy referred to was so impressed that he later became a capital safety "booster."

Not only is safety carried on through the regular instruction, Safety Councils and Committees of children, but the children themselves dramatize accident situations effectively. These dramatizations serve to impress other children and to make those taking part more conscious of the need of safety practices. The accompanying illustration shows how dramatization is carried out.

The secret of the success of school safety work lies in the degree to which safety may be made a vital reality to the children themselves. Nothing is of deeper interest to the children, nothing comes more nearly within their experience, and, finally, nothing is so completely within their own control. No wonder, then, at the success with which the schools have reduced accidents.

Educators have advocated for a generation the making of the school activities approach as nearly as possible to life activities. In the work of safety instruction and activities that ideal has been realized.

Hydrant Rentals and the Financing of Water-Main Extensions--Part I

Published in response to numerous requests for this information

State and City	Population	Ownership	No. of Services	Per Cent Metered	City Pays Hydrant Rental?	City Pays For Water Used?	Financing of Water-main Extensions
ALABAMA							
Guntersville	......	M	400	10	No	No	Income
Jasper	3,246	P	600	75	Yes	Yes	By company
Mobile	60,777	M	14,848	60	No	No	Dept. revenue
Ozark	2,518	M	400	90	Municipal	....	General fund
Prattville	2,316	M	220	90	No	No	By city
Selma	15,607	M	2,200	87	No	No	Receipts
Tuscaloosa	11,996	M	2,000	95	No	No	Income
ARIZONA							
• Clifton	4,163	P	800	36	$2.50 each per month	Regular rates	Surplus
Florence	......	M	218	100	$500 per yr.	Fire Dept. only	Bond issue
Glendale	2,737	M	875	14	No	Yes	Bond issues and profits
Morenci	5,100	P	1,238	74	No	Yes	By company
Tombstone	......	P	325	99	No	Yes	
ARKANSAS							
Batesville	4,299	M	480	100	$1,000 year 45 hydrants	No	Plant
Blytheville	6,447	P	980	100	Yes	Yes	Bonds
Clarksville	......	M	800	100	Yes	No	
Hamburg	......	M	300	50	Yes	No	Revenue
Hot Springs	11,695	P	3,100	100	Yes	Partly	Usual methods
Jonesboro	9,384	M	2,250	20	No	No	Earnings
Malvern	3,864	M	350	70	No	Yes	Returns from water sales
Pine Bluff	19,280	P	3,000	100	Yes	No	Company
Searcy	2,836	M	500	100	No	Yes	Bond issues
West Helena	6,226	P	1,000	10	No	....	
CALIFORNIA							
Alhambra	9,096	M	2,793	99.5	Yes	Yes	Assessment or general funds
Auburn	2,289	P	664	60	Yes	Yes	Company
Calexico	6,223	M	900	100	Yes	No	Bond issues
El Centro	5,464	M	1,600	60	Yes	Yes	Income
Fresno	44,616	M	15,000	10	Yes	Yes	
Fullerton	......	M	1,300	100	Charged to Fire Dept. fund	No	Bond issue
Gridley	......	M	700	90	No	No	Earnings
Huntington Beach	1,687	P	1,200	100	Yes	Yes	Income
Lindsay	......	M	900	75	No	No	Savings
Lodi	4,850	M	1,600	1	$6 per year	$2.50 month	Bonds and revenue
Los Angeles	576,673	M	144,596	97	No	No	Consumers, except in bonded districts
Marysville	5,461	P	1,115	3	Yes	Yes	Company or bonds
Modesto	9,241	M	3,251	3	No	No	Surplus revenue and bonds
Pacific Grove, etc	......	P	4,250	100	Yes	Yes	Revenue
Palo Alto	5,900	M	2,000	100	$1.50 each per month	Yes	Bond issues and surplus revenue
Pasadena	45,334	M	15,164	100	No	Yes	50c per front foot; balance by department
Red Bluff	3,104	M	900	3	No	No	
Redondo Beach	4,913	P	1,600	95	$2,000 per year for 50; remainder, $1.50 each per month	Yes	
Sacramento	65,857	M	15,000	None	No	No	Bonds
San Jacinto	......	M	250	75	No	No	Consumers, credited in water used
Sar Mateo	....	P	1,553	90	Yes	No	Surplus and dept. funds
Santa Barbara	19,441	M	5,980	90	No	No	Revenue
Sherman	......	P	400	80	No	None supplied	Deposits from property owners refunded when revenue amounts to 20% of cost
Ukiah	2,305	P	750	75	$5 each per month	Yes	Receipts
Whittier	7,997	M	2,585	98	No	No	Bond issues or revenue
Woodland	4,147	M	1,500	None	No	No	Bonds
COLORADO							
Ault	......	M	225	85	$25 each	No	Bonds
Brighton	......	M	700	1	No	No	Bond issue
Brush	......	M	......	....	No	No	Bond issue
Denver	256,369	M	49,164	2	Yes	Yes	Surplus revenue; bond issues

State and City	Population	Ownership	No. of Services	Per Cent Metered	City Pays Hydrant Rental?	City Pays For Water Used?	Financing of Water-Main Extensions
Fort Morgan	3,818	M	1,200	2	No	No	Earnings and bond issues
Greeley	10,883	M	2,300	20	Yes	No	Income
Gunnison	......	M	400	None	....	No	
Holyoke	......	M	300	98	No	No	Bonds
Julesburg	......	M	400	90	Yes	Yes	Bonds
La Junta	4,964	M	1,200	None	Yes	No	Bonds and revenue
Lamar	2,512	M	800	100	No	No	Earnings
Longmont	5,848	M	1,600	9	Yes	No	Earnings
Loveland	5,279	M	1,700	10	No	No	Revenue
Trinidad	10,906	M	3,302	10	No	No	Earnings
CONNECTICUT							
Bridgeport	143,152	P	23,306	20	No	Yes	Guarantee required from applicants which covers interest on investment
Collinsville	2,425	P	650	12.5	No	Yes	Company
Derby	11,238	P	1,303	19.64	Yes	....	
East Hartford	11,648	M	2,400	2	No	Schools only pay	Bond issues or revenue
New London	25,688	M	4,819	100	No	Yes	5% of cost per annum for 15 years, or until full amount is absorbed by consumers
Plainville	4,114	P	599	100	$25 each per year	Regular rates	10% guaranteed return on investment
Putnam	7,711	M	1,180	10	Yes	Yes	Earnings
Rockville	7,726	P	1,200	25	Yes	Yes	
Southington	5,085	M	1,300	10	Yes	Yes	Income and reserve
S. Manchester	9,000	P	2,000	100	No	Yes	Holding company
Stratford	12,347	P	......	100	Yes	Yes	Company
Terryville	4,000	P	374	6.5	Yes	Yes	Income, reserve, borrowed money or bond issue
Wallingford	9,648	M	1,660	20	No	Yes	
Waterbury	91,410	M	10,500	98	No	No	Appropriation
Westport	5,114	P	700	80	Yes	Yes	Earnings and borrowed money
Willimantic	12,330	M	1,718	90	No	No	Receipts
Woodbury	1,988	P	169	None	Yes	Yes	Borrowed money
DELAWARE							
Middletown	1,399	M	250	None	Yes	No	City
Milford	2,753	M	520	1	Yes	Yes	Revenue
FLORIDA							
Dade City	......	M	250	80	Yes	No	City taxes
De Land	3,324	M	1,200	95	No	No	Proceeds
Fernandina	5,457	M	350	60	Yes	Yes	Appropriations
Fort Pierce	2,115	M	550	50	Yes	No	Revenue and tax
Key West	19,039	M	80	None	Salt water fire system	....	Taxation
Kissimmee	2,722	M	550	100	No	No	Earnings
Monticello	1,829	M	210	100	No	No	None laid
Ocala	4,914	M	1,000	....	....	No	Earnings
Plant City	3,729	M	530	100	No	No	Bonds
Quincy	2,540	M	......	100	No	No	Bond issue
Tarpon Springs	2,105	M	400	80	No	No	Bond issue
GEORGIA							
Acworth	1,043	M	110	5	No	No	Bonds
Atlanta	200,616	M	35,000	100	No	No	Appropriations
Augusta	52,548	M	7,800	100	No	No	General tax fund
Bainbridge	4,792	M	1,050	100	No	No	Bonds
Colquitt	810	M	......	Part	Yes	Yes	Bonds
Doerun	......	M	150	67	No	No	
Jefferson	......	M	140	100	No	No	Tax levy and bonds
Jesup	......	M	245	25	No	No	City
Marietta	6,190	M	1,100	100	No	No	Revenue
Milledgeville	4,619	M	530	70	Yes	No	Bond issue
Milltown	......	M	80	100	No	No	City
Quitman	4,393	M	350	100	Voucher	Yes	Department
Thomasville	8,196	M	1,100	100	No	No	Revenue
Tifton	3,005	M	749	90	No	No	Bond
Trion	1,721	P	......	....	No	....	Company
IDAHO							
Bonners Ferry	......	M	400	1	No	No	Bond issue
Burley	5,408	M	1,200	100	Yes	Yes	Bonds
Caldwell	5,106	M	1,400	100	No	No	Earnings
Lewiston	6,574	M	1,791	80	No	No	Surplus revenue and bonds
Moscow	3,956	M	1,100	100	....	....	Department
Preston	3,235	M	650	None	No	No	Earnings or bonds
Shelley	......	M	300	20	No	No	Consumers advance 75% of cost
Weiser	3,154	M	650	100	Yes	Yes	Revenue
ILLINOIS							
Aledo	2,231	M	650	100	No	No	Special assessments
Arthur	1,080	M	142	100	....	None used	City

State and City	Population	Ownership	No. of Services	Per Cent Metered	City Pays Hydrant Rental?	City Pays For Water Used?	Financing of Water-main Extensions
Berwyn	14,150	M	3,500	100	No	No	Special assessment
Bloomington	28,638	M	8,000	98	No	No	Special assessment
Bushnell	2,716	M	460	100	No	No	Water rent and taxes
Cairo	15,203	P	3,300	15	Yes	No	Company
Carrollton	2,020	M	525	100	....	....	Bonds
Centralia	12,491	M	1,850	100	No	No	Revenue
Christopher	......	M	550	20	No	No	Special assessment
Dallas City	1,450	M	150	100	No	No	Tax
Decatur	43,818	M	8,700	99.5	No	No	Special assessment
East Moline	8,657	M	2,000	98	No	No	Special assessment
Effingham	4,024	P	500	100	Yes	Yes	Company
Geneva	2,803	M	600	100	No	No	Special assessment
Havana	3,614	M	1,000	80	No	No	Income
Jacksonville	15,713	M	1,800	100	No	No	Under public improvement law
Kankakee	16,721	P	5,000	35	Yes	No	Company
Knoxville	1,818	M	313	97	....	No	Bonds
La Grange	6,525	P	2,400	95	Yes	No	Selling stock
Lake Forest	3,657	M	950	100	Yes	No	Special assessment
Lawrenceville	5,080	P	1,000	100	Yes	No	Company
Lena	1,168	M	300	100	No	No	
Lincoln	11,882	P	2,100	100	Pays for fire protection based on size of mains	No	Company
McHenry	1,031	M	220	100	No	No	Special assessment
Morrison	3,000	M	890	25	No	No	City
Morrisonville	1,126	M	45	100	....	....	General taxation
Mt. Pulaski	1,511	M	268	100	No	No	Special assessment
Moweaqua	1,513	M	150	100	No	No	Municipal bonds
Normal	5,143	M	1,100	100	No	No	Bonds and by property owners
Oak Park	39,830	M	7,700	100	Yes	Yes	Special assessment
Ottawa	10,816	M	2,500	100	No	No	General funds
Peoria	76,121	P	18,900	71	Yes	No	Company
Peru	8,869	M	1,890	100	Yes	No	Water fund
Quincy	35,978	M	7,180	72	No	No	Surplus earnings
Rock Island	35,177	M	7,000	50	No	No	Special assessment or by department
River Forest	4,358	M	1,000	100	No	No	Special assessment
St. Charles	4,099	M	800	100	No	No	Special assessment
Streator	14,779	P	4,200	58	Yes	Yes	
West Dundee	......	M	400	100	No	No	Special assessment
INDIANA							
Albion	1,213	M	281	100	Yes	No	Earnings
Anderson	29,767	M	4,000	45	No	Yes	Revenue
Aurora	4,299	P	850	52	Yes	Yes	Not doing any
Bedford	9,076	M	1,600	6	Yes	Yes	Earnings
Bicknell	7,635	M	750	40	No	Yes	
Bremen	2,084	M	510	100	Yes	Yes	Water fund
Columbia City	3,499	M	1,050	20	Yes	Yes	Water department
Decatur	4,762	M	944	100	Yes	Yes	Earnings
Elkhart	24,277	P	6,000	90	Yes	No	Company
French Lick	3,170	P	......	....	Yes	....	
Gary	56,378	P	7,500	100	Yes	No	
Greentown	1,166	P	250	None	No	No	Company
Huntington	14,000	M	2,804	100	Yes	Yes	Department
Knightstown	2,008	M	650	100	Yes	No	Revenue
Lafayette	22,486	M	5,675	30	Yes	Yes	Department
La Porte	15,158	M	2,983	11	Yes	Yes	Surplus earnings
Lebanon	6,257	M	1,700	93	Yes	No	Revenue
Liberty	1,292	M	377	100	Yes	No	Fund derived from sale of water
Michigan City	19,457	M	5,500	None	After January 1, 1923	After January 1, 1923	Earnings and bond issues
Middletown	1,174	M	550	None	Yes	No	Budget
Mishawaka	15,195	M	3,200	100	Yes	Yes	Revenue and bonds
Newcastle	14,458	M	3,560	30	$40 each	Yes	Operating funds
No. Manchester	2,711	M	650	90	Yes	No	Special tax levy
Peru	12,561	M	3,300	2	Yes	Yes	Earnings
Rennsaelaer	2,912	M	800	50	Yes	Yes	Earnings
Richmond	26,728	P	5,525	70	Yes	Yes	Company
Seymour	7,348	P	1,400	....	Yes	Yes	Company
South Bend	70,983	M	16,000	100	$40 each per year	Regular rates	Earnings and bond issues
Summitville	1,387	P	300	None	Yes	No	Company
Tipton	4,507	M	2,300	20	Yes	Yes	Earnings
Union City	3,406	M	1,620	100	No	No	Bonds
Vevay	1,256	M	327	100	Yes	No	Water and light fund
Vincennes	17,210	P	2,800	50	Yes	Yes	Company
Wabash	9,872	P	3,000	40	Yes	No	Loans
Whiting	10,140	M	1,973	None	No	No	
IOWA							
Battle Creek	527	M	......	100	....	....	
Belle Plaine	3,887	M	453	100	No	No	Bonds
Boone	12,451	M	2,250	100	.003 tax levy	No	Profits

State and City	Population	Ownership	No. of Services	Per Cent Metered	City Pays Hydrant Rental?	City Pays For Water Used?	Financing of Water-Main Extensions
Britt	1,303	M	500	None	No	....	
Burlington	24,057	P	5,824	4	.005 tax on property	No	Income
Chariton	5,175	M	700	100	No	No	Earnings
Charles City	7,350	M	1,200	100	No	No	Revenue
Cherokee	5,824	M	1,100	100	No	No	Earnings or bonds
Clarion	2,826	M	452	98	No	No	Bonds
Davenport	56,727	P	12,000	80	Yes	Yes	Company
Des Moines	126,468	M	24,372	99.4	$350 per mile of pipe	No	Department
Dyersville	1,511	M	275	100	No	No	General funds
Eagle Grove	4,433	M	800	95	No	No	Water-works fund
Fort Dodge	19,333	M	4,000	100	No	No	Earnings
Fort Madison	12,066	P	1,500	10	Yes	No	Company
La Porte City	1,233	P	250	99	Yes	None in city buildings	Company
Manchester	3,111	M	850	80	No	No	City
Mount Vernon	1,532	M	488	100	No	No	Water fund
Muscatine	16,068	M	3,000	75	No	No	Revenue
New London	1,144	M	140	100	No	No	General water fund
Rock Rapids	2,172	M	550	93	$3,000 year	20c M gals.	Earnings
Sibley	1,330	M	250	100	No	Yes	Tax levy and water fund
Sioux City	71,227	M	12,000	100	No	No	Receipts
Stuart	1,826	M	300	75	No	No	Not any
Sumner	1,404	M	900	100	No	No	Town
Villisca	2,111	M	300	98	No	No	Water fund
Walnut	950	M	50	100	No	No	Bonds
Waukon	2,359	M	550	90	No	No	Revenue
Winterset	2,906	M	345	100	No	No	None made
KANSAS							
Arma	2,180	M	400	100	No	No	Bond issues
Atchison	12,630	P	2,850	25	Yes	Yes	Company
Cherokee	1,452	M	380	99.5	No	No	Water funds or bonds
Colby	1,130	M	340	100	No	Have none	None made
Columbus	3,155	M	935	96	.5 mill levy	No	Bonds and appropriations
Council Grove	2,857	M	560	80	No	Yes	Earnings
Downs	1,427	M	410	100	....	....	
Ellinwood	1,000	M	125	100	Yes	Yes	Light and water fund
Ellsworth	2,065	M	400	100	Yes	No	Water fund
Emporia	11,273	M	2,750	100	No	Yes	Earnings
Florence	1,168	M	325	100	No	No	Bonds
Garden City	3,848	M	700	90	Yes	No	Earnings and bonds
Great Bend	4,460	P	650	100	Yes	No	Sale of securities
Independence	11,920	M	3,600	80	No	No	Receipts
Kingman	2,407	M	900	100	Yes	No	Earnings
Manhattan	7,989	M	2,100	100	$30 each per year	No	Bond issues or revenue
McPherson	4,595	M	1,198	100	Yes	Yes	Department funds
Moran	559	M	175	100	No	No	Bond issue or revenue
Osage	2,376	M	540	100	No	Yes	Revenue
Osborne	1,566	M	500	90	No	No	Bonds
Paola	3,238	M	965	10	½ mill	No	
Pleasanton	1,373	M	300	75	Yes	Yes	
Sabetha	2,003	M	380	50	Yes	No	City
Syracuse	1,126	M	300	100	Yes	No	Consumers
Washington	1,547	M	425	99	No	No	Bonds
Wichita	72,217	P	13,890	95	Yes	No	Consumer makes $9 deposit
Wilson	981	M	300	75	Yes	No	No extensions
KENTUCKY							
Barbourville	1,633	P	300	50	$40 year	Yes	Company
Bardstown	1,717	M	350	3	No	No	Taxation sinking fund
Covington	57,121	M	11,500	100	No	No	Appropriation
Hickman	2,633	P	497	70	Yes	Yes	Company
Hopkinsville	9,696	P	2,392	58	Yes	Yes	Earnings and bonds
Paris	6,310	P	1,500	....	Yes	Yes	Water rents
LOUISIANA							
Bogalusa	8,245	M	500	....	....	....	Bonds
DeRidder	3,535	M	550	80	No	None	Income
Leesville	2,518	P	350	5	No	Yes	
New Orleans	387,408	M	59,000	100	No	No	General tax
White Castle	2,289	M	......	90	No	No	
MAINE							
Augusta	14,114	M	2,500	10	$1,000 year	No	Income
Bath	14,731	M	2,931	20	Yes	No	
Gardiner	5,475	M	1,657	....	Yes	No	Bond issue
Guilford	1,800	P	400	None	Yes	No	
Houlton	6,191	M	1,150	....	Yes	No	
Lisbon Falls	1,500	M	540	70	Yes	No	Appropriation
Lubec	3,371	M	496	25	No	No	Earnings
Phillips	1,500	P	175	None	Yes	No	Surplus
Presque Isle	3,452	P	553	2	Yes	Yes	None
Rumford	8,576	M	1,200	40	Yes	Yes	Profits
So. Berwick	2,955	P	305	5	Yes	Yes	
Warren	2,069	P	160	None	No hyd.	....	

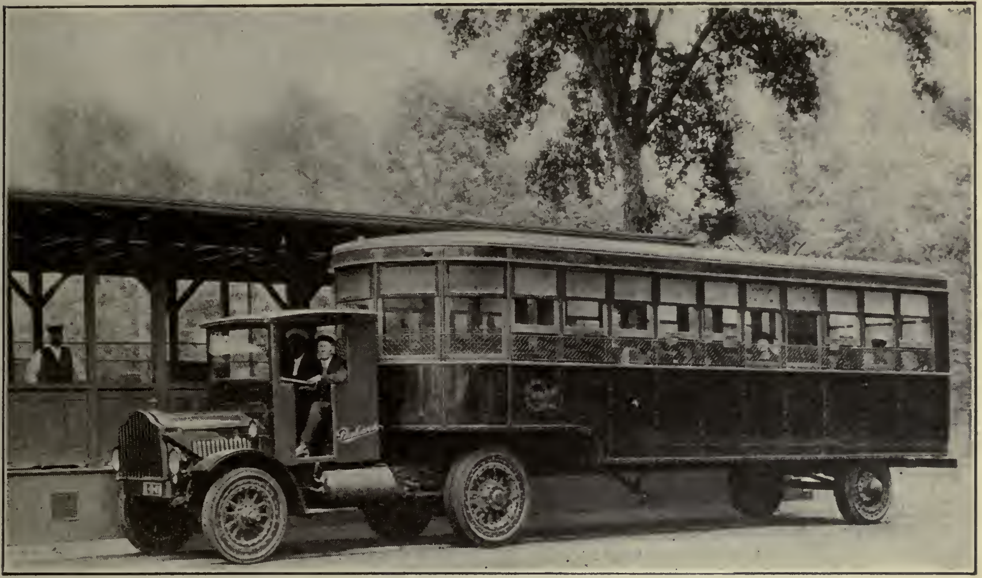
State and City	Population	Ownership	No. of Services	Per Cent Metered	City Pays Hydrant Rental?	City Pays For Water Used?	Financing of Water-Main Extensions
MARYLAND							
Belair	1,005	P	380	100	Yes	No bldgs.	Town
Washington Suburban Sanitary District	......	M	4,000	90	No	No	Bond issue
MASS.							
Arlington	18,648	M	3,318	100	No	Yes	Serial notes paid when due from earnings
Athol	9,792	M	1,600	4	Yes	Yes	Surplus
Belmont	10,744	M	2,023	100	No	Yes	Earnings
Brockton	66,138	M	10,149	100	No	Yes	Bonds
Brookline	37,748	M	6,114	100	No	No	Town or bonds
Cambridge	109,694	M	15,000	46	No	No	Receipts
Concord	6,461	M	1,375	4	Yes	Yes	Bond issue or revenue
Dedham	10,783	P	2,550	98	Contract	Contract	Bond issue
Falmouth	3,500	M	1,600	Few	Yes	Yes	Taxation and loans
Fitchburg	41,013	M	6,000	98	No	No	Loans
Framingham	16,785	M	2,781	100	Yes	Yes	Surplus revenue and bonds
Greenfield	15,642	M	2,960	13	No	Yes	Taxation and receipts
Hyannis	1,550	P	700	....	Yes	Yes	
Lancaster	2,406	M	500	90	No	Yes	Town
Lenox	2,691	P	311	95	Yes	Yes	Earnings
Littleton	2,200	M	227	99	Yes	Yes	Appropriations
Maynard	7,086	M	1,158	91	No	No	Town and applicant each pay half
Middleboro	8,453	M	1,130	100	No	Yes	Earnings
Natick	10,907	M	2,837	86	$10 year	Yes	Earnings
Needham	7,012	M	1,830	100	No	Yes	Earnings
New Bedford	121,217	M	16,685	100	No	Yes	Receipts or bonds
North Adams	22,282	M	3,500	18	No	No	Bond issue
Northampton	21,951	M	4,000	4	No	No	Charge 6% on cost of construction
North Andover	6,366	M	1,240	94.2	No	Yes	Appropriation
North Attleboro	9,238	M	1,500	100	$7,000	Yes	Vote of town
Peabody	19,552	M	3,300	85	Yes	Yes	General taxation
Randolph	4,756	P	1,230	45	No	No	Appropriation
Saugus	10,874	M	2,199	50	Yes	No	Appropriation
Sharon	2,060	M	663	2	$2,000 year for all purposes	....	
Shelburne Falls	1,515	M	355	100	No	Yes	Taxation
Shirley	2,257	M	286	100	Yes	Yes	Loans
Spencer	5,930	M	896	95	No	No	Revenue
Swampscott	8,101	M	2,050	100	$1,000 year	Yes	Bond issue
Taunton	37,137	M	6,091	71	No	Yes	Bonds
Waltham	30,981	M	4,467	98	$5 each per year	Yes	Earnings
Winchester	10,391	M	2,500	100	No	No	Appropriations
Winthrop	15,446	M	3,077	100	Yes	Yes	From earnings
Worcester	179,754	M	22,878	98	No	Yes	Loans or revenue
Wrentham	2,808	M	340	50	Yes	Yes	Appropriation or bond issue
MICHIGAN							
Adrian	11,878	M	2,800	46	Yes	Yes	Bond issues
Alma	7,542	M	1,400	100	Yes	Yes	Bonds and budget
Battle Creek	36,164	M	8,500	99	No	No	Earnings
Bay City	47,554	M	8,500	91	Yes	Yes	Earnings
Bessemer	5,482	M	700	7	No	No	City taxes
Big Rapids	4,558	M	1,000	None	No	No	Revenue
Charlevoix	2,218	M	1,000	100	Yes	Part	General tax
Clinton	1,011	P	60	5	No	Yes	
Dowagiac	5,440	M	1,350	100	Yes	Yes	Appropriations or bonds
Elk Rapids	1,673	M	250	5	Yes	Yes	None made
Escanaba	13,103	M	3,414	41	No	No	Reinvest depreciation reserve
Grand Rapids	137,634	M	......	99	....	....	
Iron Mountain	8,251	P	1,800	40	$58 year	No	Company
Jackson	48,374	M	10,206	100	No	No	Bonds
Manistee	9,690	M	2,361	62	No	Yes	Water funds
Marquette	12,718	M	2,450	55	$25 each per year	Yes	Dept. funds
Marshall	4,270	M	1,000	75	$16 each per year	No	By department
Menominee	8,907	M	2,256	60	Yes	Yes	Earnings
Milan	......	M	500	100	$40 each	No	General fund
Mt. Pleasant	4,819	M	1,200	98	Yes	No	Bonds
Munising	5,037	M	650	20	Yes	No	General fund
Muskegon Heights	9,514	M	2,000	100	....	No	Bond issue
Niles	7,311	M	2,000	90	No	No	Appropriations and income
Northville	1,665	P	600	25	No	No	
Oxford	1,191	M	......	100	....	....	
Quincy	1,347	M	300	100	No	No	None made
Reed City	1,690	M	600	None	No	No	General fund
St. Joseph	7,251	M	1,800	90	No	No	Earnings
Sturgis	5,995	M	1,600	100	No	No	Bond issue

State and City	Population	Ownership	No. of Services	Per Cent Metered	City Pays Hydrant Rental?	City Pays For Water Used?	Financing of Water-main Extensions
Three Rivers	5,209	M	1,180	100	No	Yes	General fund
Traverse City	10,925	M	2,600	55	$35	Yes	Earnings
Whitehall	1,600	M	408	100	No	No	Taxes
Ypsilanti	7,413	M	2,100	80	$50 each per year	Yes	Earnings
MINNESOTA							
Barnesville	1,353	M	177	100	No	No	City
Caledonia	1,372	M	350	100	No	No	Assessment
Chatfield	1,228	M	1	None	No	Yes	Tax
Duluth	98,917	M	17,703	......	Sometimes	Yes	Surplus earnings
Jordan	1,151	M	45	100	No	No	General taxes
Lake City	2,846	M	542	100	Yes	No	Revenue
Litchfield	2,790	M	500	100	Yes	No	Water and light fund or general fund
Luverne	2,782	M	900	100	Yes	Yes	General fund
Minneapolis	380,582	M	66,500	99	No	Half-rate	Receipts and assessment
New Prague	1,554	M	160	100	$25 each per year	Yes	Assessment
Pipestone	3,325	M	725	75	Yes	No	Assessment
St. Charles	1,159	M	400	75	No	No	City
Staples	2,570	M	205	100	Yes	No	Earnings
Two Harbors	4,546	M	1,100	40	No	No	Water and light fund
Winthrop	1,043	M	95	100	No	No	City
Zumbrota	1,138	M	205	100	No	No	City funds
MISSISSIPPI							
Charleston	3,007	M	400	90	No	No	Water-works fund
Louisville	......	M	300	95	....	....	Proceeds of plant
Bethany	2,080	M	403	100	No	No	City or bonds
Bolivar	1,975	M	400	85	No	No	Bond issue
Brunswick	1,606	P	280	33	Yes	Yes	Company
El Dorado Springs	2,212	M	305	....	No	No	Bonds
Hannibal	18,950	M	3,880	15	No	Yes	
Lebanon	2,848	M	700	100	No	No	Monthly collection
Paris	1,474	M	312	100	No	No	General fund
St. Charles	8,503	M	1,400	5	No	No	Income
St. Louis	772,897	M	119,500	7.7	No	No	Revenue
Sedalia	21,144	P	3,500	80	Yes	Yes	Sale of securities and earnings
Trenton	6,951	M	1,300	100	No	No	Income
Unionville	2,000	M	150	50	No	No	Bond issues
Vandalia	2,158	M	300	25	No	No	Tax levy
Webb City	7,807	P	2,500	100	Yes	Yes	
Webster Groves	9,474	M	2,400	100	No	No	Bond issues
MONTANA							
Polson	1,500	M	350	5	....	No	Bonds
Sidney	1,200	M	144	100	Yes	No	Special improvement districts
		½					
NEBRASKA							
Albion	1,978	M	500	100	No	No	Property owners pay 50c per lineal foot; plant pays balance
Blair	2,702	M	500	50	Yes	Yes	Earnings and levy
Cedar Bluffs	500	M	145	97	Yes	No	Warrants
Crawford	1,323	M	446	91	No	No	Profits
Doniphan	500	M	120	100	No	No	Bonds
Edgar	1,080	M	270	100	No	No	Tax
Fairbury	5,454	M	1,200	100	No	No	Department
Grand Island	13,960	M	2,700	100	Yes	Yes	50c per foot frontage balance from water fund
Hastings	11,647	M	2,826	100	Yes	Yes	Assessment
Humboldt	1,176	M	328	100	No	No	Tax
Lincoln	54,948	M	11,843	100	No	No	Assessment
Madison	1,708	M	600	100	No	No	
North Platte	10,466	M	1,500	100	Yes	No	Water-main districts
Omaha	191,601	M	35,000	99	$60 each	No	Assessment
Red Cloud	1,686	M	500	90	No	No	Bonds
Wilber	1,230	M	450	95	No	No	Receipts and direct tax levy
NEVADA							
Goldfield	4,000	P	300	100	No	No	None

Building Boom is Reflected in Water-Main Extension Inquiries

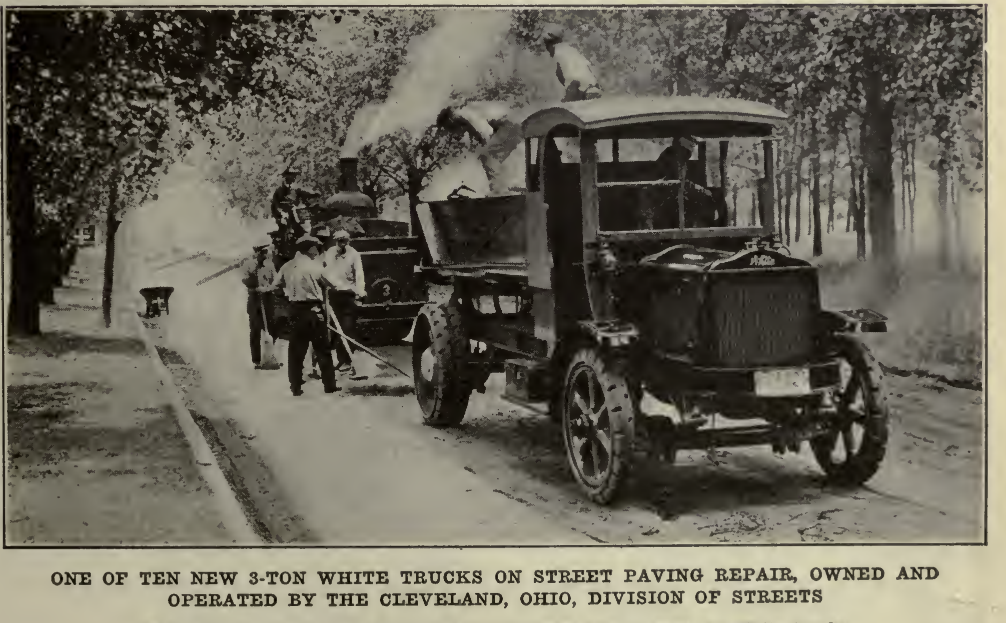
The building boom which has extended practically throughout the United States in the last year has resulted in a large number of inquiries coming to THE AMERICAN CITY from municipal officials, asking for a statement of the methods used by various cities to finance water-main extensions. At the same time many cities seem to be experiencing difficulties in properly adjusting hydrant rentals, so that a large number of inquiries have also come from that source. We take pleasure in publishing the table above, which will be continued in the December issue of THE AMERICAN CITY, giving data not only on water-main extensions and hydrant rentals, but also on the population of the city, the ownership of the water-works, the number of domestic and commercial services and the per cent metered in each city.

Motor Trucks in Municipal Service



DETROIT'S NEW MUNICIPAL BUSSES HAVE RECORD CAPACITY

The Detroit Park Department has recently placed in service one of the largest passenger-carrying trucks in service anywhere to-day. It consists of a trailer mounted on a Packard tractor wheel-base chassis and has a seating capacity of 56, and a total capacity of 115 when persons are permitted to stand in the aisle. An air pump provides compressed air, which is used to operate the brakes and the mechanical equipment for opening and closing the doors which extend along the right side of the bus. Loading stations are provided at several points on Belle Isle, Detroit's largest park, and at the land terminal located at the land approach of the bridge. The loading stations are so placed that sharp turns must be taken, and the new carrier is so designed that it can make a complete turn within a radius of 35 feet. Busses leave the loading stations for the trip across the bridge at 15-minute intervals, and operate 12 hours daily.



ONE OF TEN NEW 3-TON WHITE TRUCKS ON STREET PAVING REPAIR, OWNED AND OPERATED BY THE CLEVELAND, OHIO, DIVISION OF STREETS

The various municipal departments in Cleveland now operate 92 White trucks

Chamber of Commerce Activities in Public Affairs

California Chambers in City Planning Contest

An interesting feature of the Second Western Summer School of Community Leadership held in September at Stanford University, was a competition between the secretaries of California cities to establish the best record of progress in city planning during the preceding year. Each secretary was invited to prepare a brief statement of accomplishment in his city for submission to a committee of judges consisting of Professor Edwin A. Cottrell of Stanford University, Charles H. Cheney, city planner, and Roscoe D. Wyatt, President of the California Association of Commercial Secretaries. The committee awarded first place to Lynn W. Ballard, Secretary of the Long Beach Chamber of Commerce, and gave to two other contestants, L. D. Blodgett, Secretary of the Bakersfield Chamber of Commerce, and M. J. Haig, Secretary of the Whittier Chamber of Commerce, the privilege of reading their statements at one of the sessions of the student body.

The prize-winning outline of the city planning progress in Long Beach follows:

Real city planning must carefully consider not only the beautiful and the atractive, but the practical and the result-getting as well. Long Beach had this principle in mind in its work in city planning.

Naturally, the first thing in city planning is securing the planning commission. The Long Beach City Council early made provision by ordinance for the Long Beach City Planning Commission. City Manager Hewes named four citizen members, and the charter provides that the City Attorney, City Engineer and Manager shall also be members of the Commission, the City Manager being the presiding officer.

A planning commission without funds is helpless. The second necessary thing, therefore, was done, and a budget appropriation of $6,000 was provided, which, with $2,000 additional work by the City Engineer's office, made the first year's work possible. With the Commission and the funds for its work, after careful survey, the Commission was unanimous in the choice of Charles H. Cheney as consultant. The Commission and Mr. Cheney agreed that the budget provision was ample for the first year's work in a community of 70,000 people.

The two greatest things accomplished in the Long Beach Zone Ordinance are: first, permanent establishment of a large area of the city for the building of single-family dwellings only, thereby protecting and stimulating home ownership, which must be the backbone of any city and is one of the best guarantors of contented labor conditions, the greatest antidote for Bolshevism, and one of the things most sought for by new industries; second, the establishment of the first and only industrial zones in Southern California, where industries are protected instead of being only tolerated, that is, industrial zones where no residence permits can be obtained—industrial interests are paramount.

A comprehensive survey was made in which not less than fifty group meetings in neighborhood schoolhouses were held in all sections of the city. Because of the rapidity with which the city is growing, the work had to be done as rapidly as possible, and as an immediate protection the Zone Ordinance was prepared and adopted by piecemeal, the first within three months from beginning the work, the entire ordinance being completed and passed within eight months from the date of beginning. We believe it more satisfactory, where possible, to adopt the ordinance for the entire city at one time. This ordinance is comprehensive and complete, establishing:

1. The best use of property
2. The height of buildings

3. The area of lots to be covered in all parts of the city

The matter of a comprehensive major traffic plan was studied, and a tentative plan quite complete is now being given the best attention of the Commission. Within a few months we expect to have the traffic problem in the business section fully solved, together with a complete layout for the outlying streets and provision made for street building where the need is greatest.

The plan for the unification for all rail lines is well under way. After twenty years' work the Union Pacific has agreed to remove its tracks from Ocean Avenue along the front and is already building its freight station in the industrial district. The removal of the Southern Pacific tracks from Broadway is also under way, and the Southern Pacific and Pacific Electric are also building a joint freight terminal in the industrial district.

The establishment of a Park Commission has been recommended, and the personnel will be decided very shortly. The city budget includes approximately $40,000 for the improvement of parks this fiscal year.

No housing code has been adopted as yet, but the Zone Ordinance includes within its area-requirements most of the provisions of a housing code. A new building code has been prepared by the Building Inspector after conference with a committee of the Chamber of Commerce and is ready for adoption.

In addition to this definite work done, the first year has made possible the laying of plans for the completion of the entire program of what makes up a complete city plan.

We believe the big accomplishment necessary in every city is to bring the citizens to a realization of the desirability of a city plan and a very large majority commitment to it. This Long Beach has done.

A State Chamber of Commerce Referendum on City Manager Government

Chicago, Ill.—Chambers of commerce in thirty cities out of thirty-two voted in the Illinois Chamber of Commerce referendum in favor of letting cities of 5,000 population and over decide whether to adopt the city manager plan of government. In most cities the majorities were large. Members of the Illinois Chamber voted more than eleven to one in favor of submission.

The question as stated in the referendum was, "Shall the Legislature empower cities of more than 5,000 population to decide, by vote of their people, whether they shall adopt the city manager plan of government?" Cities of less than 5,000 already possess such power.

An actual poll of the membership was taken by the chambers of commerce in twenty-four cities, and among this number Benton, with a population of 7,201, was the only one which returned a majority in the negative. The vote was cast by directors, without taking a membership poll, in nine organizations, and in this list the only negative majority was returned by the Belleville Commercial Club. Belleville's population is 24,701. The Belleville Board of Trade did not participate in the referendum. Two commercial organizations in Moline, the Chamber of Commerce and the Business Men's Association, participated in the referendum, and each voted "Yes." In LaGrange, Litchfield, Mt. Vernon and Onarga, the vote was unanimous for the affirmative.

The complete affirmative vote was as follows:

Aurora
Belvidere
Bloomington
Cairo
Chicago Heights
Cicero
Danville
Decatur
East St. Louis
Galesburg
Hoopeston
Jacksonville
Joliet
Kankakee
LaGrange
LaSalle
Lawrenceville
Lincoln
Litchfield
Mattoon
Moline
Monmouth
Mt. Vernon
Onarga
Ottawa
Peoria
Rockford
Sterling
Urbana
Waukegan

The organizations participating in the referendum represented exactly one-third of the organization members of the Illinois Chamber of Commerce at the time the ballots were sent out. Since this time the organization membership of the Illinois Chamber has been increased to 102. The Chamber has 1,069 individual and firm members. It is generally considered that the Illinois Chamber's individual members, together with the members of the local chambers of commerce which are affiliated with the state chamber, make a total of 50,000 leading business men of Illinois.

T. R. MOSS,
Manager, Organization Service Department, Illinois Chamber of Commerce.

Arguments pro and con on the city manager plan are given in the printed referendum, copies of which may be secured from Harvey T. Hill, General Secretary, Illinois Chamber of Commerce, 10 South La Salle Street, Chicago, Ill.

A Busy Rest Room

Canton, Ill.—Canton's community rest room is one of the city's busiest centers. An average of 750 country people, shoppers, school children and out-of-town visitors use its facilities every day. The rest room, postal station, employment and information bureau are open from 8 A. M. to 10 P. M. Matrons are always in charge. Civic organizations and the B. & O. band and Red Cross have their headquarters in the room. Dollar Days, community advertising and other special activities are handled through the office. Canton is proud of its rest room.

CHESTER POWELL,
Secretary, Community Rest Room Association.

A Well-planned Investment

Anaheim, Calif.—A group of Anaheim Chamber of Commerce members recently bought for the California Valencia Orange Show, a subsidiary undertaking of that Chamber, the 15-acre Valencia orange grove of J. B. Andrews, situated northwest of the city limits. The price was $45,000. The deal was made possible by the issuance of 600 certificates of $100 each, making a capital of $60,000, for which 7 per cent interest is being paid. This sum includes $14,400 representing unpaid expenses of the 1921-1922 California Valencia Orange Shows. The Anaheim City Council offered to set aside 5 acres of their 20-acre new city park, and this offer has been tentatively accepted by the Orange Show Management, but they felt that with the growth of the city and the show, a larger piece of ground would be necessary within three years.

It is proposed to leave the new acquisition as an income-producer for the next two or three years, as the oranges will pay the 7 per cent on the whole capital stock and a wide margin for the best scientific up-keep obtainable. Ten acres of the new purchase will be held for exposition purposes, the remaining five to be sold or subdivided into lots, which in 1923 will undoubtedly net the Chamber $25,000 of its $45,000 purchase price. Within ten days of the signing of the papers an offer to buy was received which would have netted the Chamber $7,500.

Toward making the initial payment on the Andrews grove, the Chamber used $2,400 which represented its net profits on some apartments built under its direction in 1920, with moneys subscribed by its members, who received 10 per cent per annum during the life of their subscription.

MALCOLM A. FRASER,
Secretary, Anaheim Chamber of Commerce.

Chamber of Commerce Secures Interim Zoning Ordinance

Lowell, Mass.—Through the efforts of the Lowell Chamber of Commerce, an ordinance has been adopted by the City Council authorizing the appointment of a City Plan Commission and also authorizing this Commission to have a city plan prepared for Lowell. The Commission has been appointed by the Mayor and approved by the Council, and immediate steps will be taken for the preparation of a city plan.

The Chamber of Commerce has also caused to be introduced an ordinance providing for temporary zoning, which will be effective until the proposed city plan is completed. This has become necessary owing to the frequent encroachment of business in the residential districts of the city.

GEORGE F. WELLS,
Secretary-Manager, Lowell Chamber of Commerce.

Second Winter Carnival a Great Success

La Crosse, Wis.—The Winter Carnival of sport and fun held in La Crosse in January, 1922, was even better than the initial one of the year previous. The committee was able to correct faults of the first event, and a larger number of participants and a wider variety of events contributed towards making the recent occasion one long to be remembered.

The parade was the most notable feature of the celebration and brought out seventy-five marching clubs with about three thousand people in line. A great variety of color schemes was offered for the enjoyment of the multitude which lined the principal thoroughfares of the city. It required one hour for the parade to pass a given point.

In addition to the marchers themselves, several bands, about thirty drum corps and a score of floats took part in the procession. Other parades were held in connection with the crowning of the Queen of the Carnival at the Ice Palace, the residence of King Boreas II, and prior to the wonderful display of fireworks on the last night of the four-day frolic.

Some of the best-known amateur skiers

and a number of professionals participated in the skiing. Fancy skating, distance skating for both adults and juniors, dog-sled races and horse racing were other sports indulged in. Push-ball contests, hockey and curling also attracted attention, and both hockey and curling clubs have been started as a result of the carnival.

The streets were gaily decorated with evergreens, colored lights and the national colors, and during the principal events business houses closed to permit their employees to take part. Bands and orchestras were playing on the plazas every afternoon and evening, four dances were held each evening, a street animal circus gave several daily performances, and gayety reigned supreme.

The event was financed by a guarantee fund subscribed by the merchants and manufacturers of the city, and by the sale of carnival buttons and of votes for Queen of the Carnival. It was widely advertised in newspapers and by posters over a large area of Wisconsin, Minnesota and northern Iowa, and the various pageants were witnessed by large crowds of out-of-town people, who took advantage of the special reduction in railroad fares.

ELEANOR E. WHITING,
Assistant Secretary, Chamber of Commerce of La Crosse.

Publicity on the School Question

Henderson, N. C.—One of the major activities of the Henderson Chamber of Commerce this year has been its educational work, which resulted in a practically unanimous vote at an election for school bonds sufficient to erect three new, modern and up-to-date brick school buildings. At the suggestion of the Chamber, no limitations were made as to the specific use to which the money is to be put. After the issue was carried, the Chamber conducted an open forum on the school question. This forum was largely attended, and the School Board was made familiar with the wishes of the people. The forum was followed by a meeting in each of the four wards, with the result that satisfactory locations were selected for each of the three new school buildings, and there are no "knockers" left to criticise, because the public is in possession of all the facts as a result of our educational campaign. With but little adjustment, the public's wishes coincided with those of the members of the Board of Education who have charge of the work. Each of these new buildings will be ready before the holidays, and Henderson's need will have been taken care of. This campaign also made it possible for the School Board to employ for the boys in the High School an athletic instructor, who will be a member of the faculty.

GEORGE E. COMER,
Secretary, Henderson Chamber of Commerce.

Chamber Puts Over Successful B. & L. Campaign

Aurora, Ill.—Realizing the need for more houses in Aurora, and the fact that the Building and Loan Associations are equipped to handle loans for the building of homes providing they have sufficient funds, the Chamber of Commerce undertook to organize a stock-selling campaign in which the Real Estate Board cooperated.

On two occasions the Chamber of Commerce had attempted to organize housing corporations, but both of these attempts had failed—an experience which many other cities have had. The stock-selling campaign, however, succeeded. There was over a million-and-a-half dollars subscribed, which will result in at least one hundred additional houses for Aurora during the present year, and the effects of the campaign will be felt for the next one hundred months.

Newspaper publicity, in the form of advertising, editorials, and news items, was prepared and used for about two weeks prior to the campaign, and some publicity was used during the campaign. The advertising, as well as the news items, explained the Building and Loan idea from the standpoint of an investment and systematic savings.

The campaign was organized in four divisions, with a major presiding over each division, who in turn had his captains and lieutenants. One major was given all the factories. Each factory appointed a captain, who surrounded himself with enough workers to wait upon all employees. All told, the factory employees subscribed over one-half million dollars. The other three majors were responsible for the prospects provided their workers.

A city directory was used by the Building and Loan Associations to check off their present stockholders, who they felt could increase their holdings. The new prospects were also secured from the city directory.

Dallas makes her tax dollar do more

The "Caterpillar's" field of usefulness is by no means limited to road making. There is a "Caterpillar"* of size and capacity for every power need. On farm or ranch, in the mining, oil and lumber industries, for snow removal and other civic work—wherever power and endurance are at a premium, the "Caterpillar"* has no real competitor.*

Dallas, Texas, after competitive demonstrations, bought three 5-ton "Caterpillars"* in June, 1921, for use in its street maintenance department. These machines proved so economical of time and labor that last April the City added another 5-ton and a 10-ton "Caterpillar"* to its fleet. City Engineer Fairtrace says: "Before we had "Caterpillar"* motorized outfits we could only smooth up our 300 miles of dirt and gravel streets once a year. *Now we are grading these same streets every six weeks, or eight times as often. And our yearly cost of street maintenance has not increased one penny.*" Hundreds of other progressive cities and towns throughout the country are using "Caterpillar"* power to reduce the cost of leveling and ditching streets and alleys, hauling materials, preparing park sites, removing snow, and doing belt work. Write for our booklet on the "Caterpillar"* in municipal service.

**There is but one "Caterpillar"—Holt builds it. The name was originated by this Company, and is our exclusive trade-mark registered in the U. S. Patent Office and in practically every country of the world.*

CATERPILLAR
Reg.U.S. Pat.Off.
HOLT
PEORIA, ILL.
STOCKTON, CALIF.

THE HOLT MFG. CO., *Inc.*, PEORIA, ILL.

Branches and service stations all over the world

Eastern Division: 50 Church Street, New York

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Chicago, Illinois
Holt Company of Texas, Dallas, Texas

Des Moines, Iowa
Minneapolis, Minnesota
Indianapolis, Indiana
Canadian Holt Company, Ltd., Montreal, P. Q., Canada

These prospect lists were card-indexed on colored cards.

Six telephones were installed in the Chamber of Commerce, and a corps of workers kept them in operation throughout the day, and sometimes during the evening, calling the present stockholders of the Building and Loan Associations, inviting them to increase their subscriptions. In this manner over $100,000 was subscribed.

We are sorry that we have not copies of all of the news items and the several ads for distribution. The local Building and Loan Associations, however, are in a position to provide the information used in preparing copy.

Our campaign was enthusiastically received, and many men worked who do not ordinarily work in the regular campaigns known to all cities. The total cost of the campaign was about $1,500.

We recommend this idea to all cities for serious consideration, especially where a housing shortage exists.

H. A. BLISS,
Managing Secretary, Aurora Chamber of Commerce.

Financing Repairs to Buildings

Newport, R. I.—As a means of stimulating employment of labor and at the same time providing for property owners a means of financing repairs to homes, business property, etc., a most commendable plan has been devised by the Newport Chamber of Commerce in cooperation with the bankers and contractors of the city and surrounding community. The plan is a simple one, by which the banks pay to the contractor the cost of the repairs on the completion of the job, and take as security serial notes signed by the property owner and endorsed by the contractor. This enables the home owner to make payment to the bank in small installments, as he receives his money in wages, rent or otherwise. The plan has stimulated a great amount of business for contractors in Newport during a time of severe depression, and it has given such general satisfaction that it will be continued throughout the year.

People took advantage of similar plans for purchasing automobiles, player-pianos and other luxuries during the spending orgy through which the country has passed, and many in our community are now taking advantage of this same plan to finance repairs to homes, etc., that in the meantime have been sadly neglected. The conditions are these:

1. The property owner pays 20 per cent down when the work is completed.
2. For the balance a series of eight notes or less, if the owner may elect, of equal amounts, signed by the property owner and endorsed by the contractor, will be accepted by the bank. These notes shall be due and payable in 30, 60 and 90 days, etc., until all are paid.
3. Further conditions:
   (a) These notes are not renewable; they must be paid when due.
   (b) The minimum amount of any single note will be $25.
   (c) The rate of interest will be 6 per cent, payable at maturity of each note.
   (d) The minimum interest charge on any note will be 25 cents.

HOW IT WILL WORK

Supposed repairs to cost	$500.00
Cash	100.00
30-day note	50.25
60-day note	50.50
90-day note	50.75
4-months' note	51.00
5-months' note	51.25
6-months' note	51.50
7-months' note	51.75
8-months' note	52.00
Total cost	$509.00
Contractor's bill	500.00
Cost of easy payment plan	$9.00

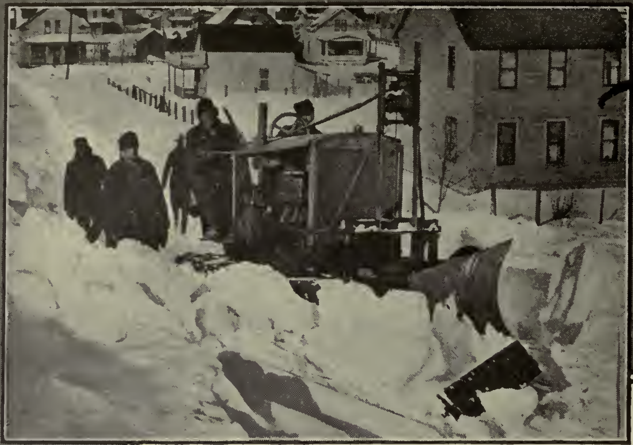
W. C. CAMPBELL,
Managing Secretary, Newport Chamber of Commerce.

South Bend's Safety Progress

South Bend, Ind.—The South Bend Safety and Fire Prevention Council is securing, in the opinion of the Police Department and others, very unusual results through its Vigilance Committee, which now numbers 150 members. We find that the personal touch that we are able to put into the work has a very satisfying reaction, entirely different from that secured by the Police Department itself when it must use other methods.

During Fire Prevention Week, October 2-9, we distributed questionnaires to be used by the children in the home and returned to the school, which, in turn, filed them with us. This report has given us a comprehensive understanding of the conditions of many homes, and, through the cooperation of the Fire Department, the Chief of which is Chairman of our Fire Prevention Committee, we shall be able to rectify, to a very large degree, conditions found to warrant a hazard.

On one evening, we had the entire Police Department as guests of the Council

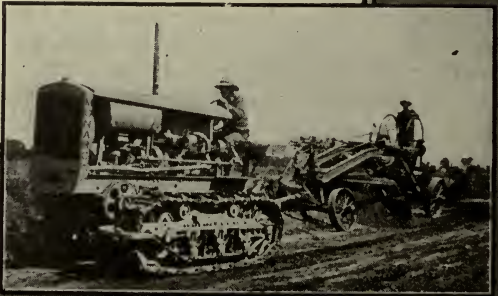


TRACTOR SERVICE AT ALL TIMES

MONARCH TRACTORS furnish to the city or to the contractor a powerful hauling unit which pulls graders and other road machines during the road construction season, while during the winter, with equal satisfaction, it opens up snow-bound roads when it is equipped with a locomotive type snow-plow. Ample power, simplicity of construction and accessibility are the inherent qualities of Monarch Industrial Tractors.

Write for our interesting booklet, "Monarch Facts," describing the work of the Monarch Tractor, an efficient all-season machine.

MONARCH TRACTORS, Inc.
Watertown, Wisconsin



at dinner, and shifts to meet the change of day and night service. The following week we entertained, in like manner, the entire Fire Department. We believe that this will bring about a better mutual relationship and understanding between the men who actually perform the service and ourselves.

The schools are cooperating with us to the fullest extent, and, on request, the Teachers' Federation has affiliated with the South Bend Chamber of Commerce and has a committee working with us in the Federation. Our plans contemplate the inaugurating of a Foremen's School which will embrace the foremen of the various plants of the city. In addition to this, we are erecting bulletin boards throughout the city with safety posters changed each week. These boards are of all-metal construction and permanent in character.

We feel that we are performing a service to the community that will react to its safety.

FRANK J. GREEN,
Secretary-Manager, South Bend Chamber of Commerce.

City Limits Extended

Columbus, Ga.—The Chamber of Commerce has just secured legislation calling for an election to extend its city limits, this act virtually assuring an expansion program which will take in 10,000 good citizens, who for years have had every interest in the city, and whose homes are now on the edge of the city limits. The movement grew out of suggestions from group meetings and by mail that expansion should be one of the Chamber's major projects for the year. Numerous meetings were held to harmonize all interests and to acquaint the legislators with reasons for annexing the territory. The annexation election will be held this fall, and as only a majority of the combined vote of those in the city and those in the territory affected is needed, there is little doubt that the territory will be voted in.

S. A. SPIVEY,
Secretary, Columbus Chamber of Commerce.

Chamber Cultivates Civic Organizations

Sioux Falls, S. Dak.—By its cooperative and friendly attitude, the Sioux Falls Chamber of Commerce has developed a very fine spirit among the civic organizations of the city. Recently the Board of Directors of the Chamber were hosts at a dinner given to the presidents, secretaries, and chairmen of the public affairs committees of the Rotary, Kiwanis, Booster and Lions Clubs at the Chamber's dining-room. The single purpose of the dinner was to strengthen the bonds of friendship between the organizations. The program included a series of brief talks by officers of the clubs represented, designed to show what could be accomplished for Sioux Falls through close cooperation. It is now the settled policy of the Chamber to call for a committee from each of these brother organizations to discuss problems of city-wide importance as they are presented to the Chamber for solution.

CHARLES McCAFFREE,
Secretary, Sioux Falls Chamber of Commerce.

More Paving for Walsenburg

Walsenburg, Colo.—One of the biggest projects yet undertaken by the Chamber of Commerce culminated successfully with the letting of contracts for the construction of approximately 40,000 square yards of bitulithic pavement, at a cost of $130,000. A large section of the business district and part of the near-by residential area will be benefited.

CHARLES O. UNFUG,
Secretary, Walsenburg Chamber of Commerce.

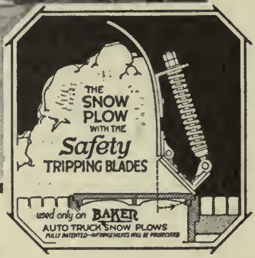
Bond Issues for City Improvements

Sanford, Fla.—The Sanford Chamber of Commerce was responsible recently for carrying through a $625,000 bond issue for municipal improvements. Provision was included in this for paving an additional 10 miles of streets, the cost of which will be $468,000. There is also an item of $67,000 for the construction of a yacht basin on the lake front. Extensions and improvements to the present sewerage system will amount to $40,000, which was also provided for in the budget, as well as a public library building to cost $15,000. The amount of $35,000 is set aside for the retirement of outstanding city warrants.

The Chamber of Commerce also handled the publicity which made successful the carrying of a county bond issue in the amount of $100,000 for maintenance of roads. The organization is active in preparing plans which will eventually mean the municipal ownership of the public utilities of Sanford.

R. W. PEARMAN, Jr.,
Executive Secretary, Sanford Chamber of Commerce.

One of a fleet of Baker Auto Truck Snow Plows which keeps Salt Lake City streets clear of snow.


THE SNOW PLOW WITH THE Safety TRIPPING BLADES
used only on BAKER AUTO TRUCK SNOW PLOWS
FULLY PATENTED—INFRINGEMENTS WILL BE PROSECUTED

BAKER

SNOW PLOWS

The Dependable Snow Movers

There's a feeling of security in knowing that you have dependable snow moving equipment at hand. Baker Snow Plows are known for their dependability. They are built for the tough job of snow moving whether with motor trucks, tractors or horses. Each type of plow is designed by experienced engineers and adopted only after exhaustive tests.

AUTO TRUCK SNOW PLOWS

Universal Attachments to Standard Motor Trucks

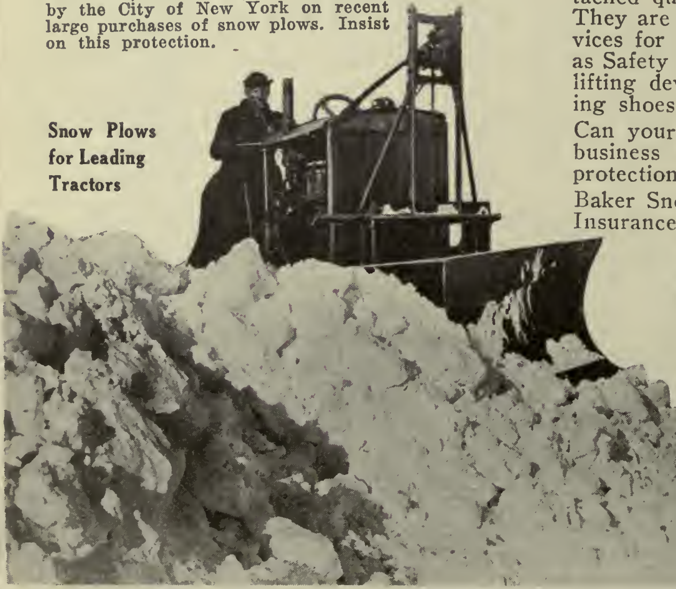
The installation of Baker Auto Truck Snow Plows means protection against traffic tie-ups. In every nook of the Snow Belt you will find counties with fleets of them. The largest cities are using them. It's the same story everywhere—they are giving satisfaction because they stand up to the job. They do the work better. They can be attached quickly to any standard truck. They are equipped with numerous devices for safety and convenience such as Safety Tripping Blades, self-locking lifting device and adjustable supporting shoes.

Can your City, your County or your business afford to be without snow protection?

Baker Snow Plows are the best Snow Insurance.

Patent Safety Tripping Blades

Every straight blade Baker Snow Plow is equipped with the Baker Patent Safety Tripping Blades hinged to the bottom of the plow which trip back when striking man-holes, car tracks, etc. Specified by the City of New York on recent large purchases of snow plows. Insist on this protection.



Snow Plows for Leading Tractors

Ask about our Special Tractor Snow Plows

Write today for Snow Plow Literature.

The BAKER Mfg. Co.
503 Stanford Ave.
Springfield, Illinois

Designing and Equipping the School Cafeteria--Part II

By A. E. Merrill

The Kitchen

ALTHOUGH first consideration has been given to the counter and the dining-room, no less important is the kitchen. It is here, too, that the greatest errors have been made. The most common mistake is a space too cramped and equipment too meager. One large open kitchen facilitates the work and prevents loafing. Ample range and oven space is essential, and when steam of 15 pounds pressure can be obtained, a vegetable steamer and jacket kettle should be included. If this is possible, two large hotel ranges and a portable bake-oven are sufficient for each counter service. If not, at least three ranges and one oven are necessary. Bread and rolls are very seldom baked, as the local baker can supply them at a lower cost; the oven is used for pies, cakes, puddings and potpie dishes.

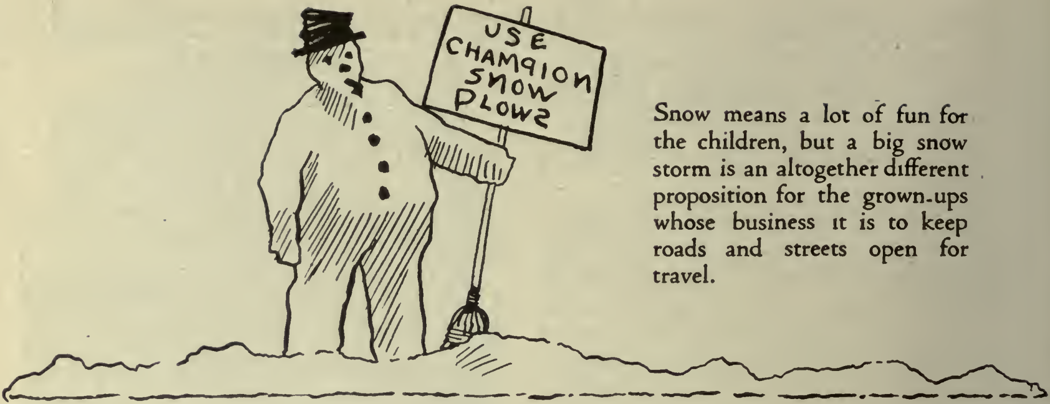
The ranges are generally selected for gas if it is available. They should be of one of two types, either provided with concentric ring burners or a series of water heater burners across the front which throw the flame from front to back. In either instance, the top should be of polished steel plates, to furnish a smooth, evenly heated top for pots and pans. Ovens should be insulated, heated by bar burners with pilot light attachment. The doors should be self-closing, insulated and thoroughly braced. The bake-oven may be either of the cabinet variety, built in one unit with galvanized insulated walls and metal shelves, or of the portable type which comes in sections and is provided with tile shelves. Gas is the most satisfactory and cleanly fuel for either of the above types. If expense is not a consideration, the electric oven is most satisfactory and gives an even, easily adjusted temperature for any purpose which is desired.

VIEW OF THE SERVICE COUNTER OF THE H. R. PATTENGILL JUNIOR HIGH SCHOOL, LANSING, MICH.

In general, ranges, bake-oven, kettle and steamer are lined up on the wall of the kitchen opposite the dining-room partition. A canopy 4 feet wide and at least 24 inches in depth is hung over them. The kettle and steamer are placed in a drip-pan to catch all condensation and also to allow them to be easily flushed out after each use. A swinging arm faucet hung over them furnishes the water-supply. Kettles may be of cast iron, retinned copper or aluminum. A hinged cover and a large faucet should be required on each kettle.

The steamer should be made in one-piece single, double or triple sections, and fitted with adjustable swinging doors on each section. These doors when closed automatically turn on the steam; when opened, the steam is shut off and the steaming baskets are brought out of the steam on a roller carriage. This eliminates all possibility of a scalded operator or serious burns from reaching into the steamer after the baskets.

In front of the line of ranges the cooks' tables and bakers' table should be arranged. Each should be of selected sectional maple, tongued, glued and rodded together, mounted upon iron stands fitted with metal drawers and shelves. The bakers' table is also provided with metal tilting bins. A mixing-bowl and hot plate complete the special equipment for the baker in this size kitchen.



Snow means a lot of fun for the children, but a big snow storm is an altogether different proposition for the grown-ups whose business it is to keep roads and streets open for travel.

There was a time—not long since—when the cost of moving snow from public highways by hand labor, the only method then known, was practically prohibitive. To-day a snow storm need not be a nightmare to road and street officials, because the Champion Snow Plow, attached to a motor truck or tractor, will quickly and easily clear snow from highways at small expense.

The Champion Snow Plow which has successfully met the test of of time and service, can be readily attached to any standard make of truck or tractor. It consists of a steel scraper blade which is hung on a semi-circular steel frame, providing angular adjustment, permitting either right or left hand cutting.

The Champion Plow will save its initial cost after one snow storm. It is used and endorsed by town, county, city and state highway departments. No municipality within the snow belt can afford to be without one or more of these plows.

An informing catalog will be sent free to anyone who asks for it.

BOSTON, MASS.
NEW YORK, N. Y
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PITTSBURGH, PA

The GOOD ROADS MACHINERY Co INC
KENNETT SQUARE PENNSYLVANIA

SAN FRANCISCO, CAL
CHICAGO, ILL
KANSAS CITY, MO
PORTLAND, ORE

It is, however, necessary to provide an icebox, a sink, and a mixing-machine to be used by the baker and others, and all these should be placed as near the oven as practical.

The mixing-machine is of utmost importance, as it is used by the baker for mixing cake dough and mayonnaise or whipping cream. It is of greatest service for beating potatoes and should be selected with 80- and 30-quart bowls. At least two beaters, two whips, one dough hook and a puree brush are the needed attachments. A convenient location is at the end of the cooks' table next to the baker.

A general improvement is noticeable in the construction of stock service refrigerators of all makes, and it is possible to select all the boxes needed in the average school cafeteria from those carried in stock by leading concerns.

The larger of the two ice boxes for the kitchen should be provided with an overhead ice bunker and one walk-in compartment fitted with meat racks and shelves. One large entrance door with a self-closing catch and heavy conduit fastener opens into this room. The other compartment may be filled with four service doors opening into a space supplied with shelves, the smallest of these boxes with six doors. The ice chamber is in the center, and a storage chamber fitted with shelves surrounds this on both sides and below. These boxes are substantially made and may be used either with ice or an ice machine. Thinner walled boxes waste quantities of ice and will not hold any low temperature in a hot kitchen. The original difference in cost is quickly consumed in excessive ice bills and wasted food.

Sinks are necessary for pot washing, vegetable cleaning and glass and silver washing, and should be made of galvanized iron of at least 14-gage. A good general size is 24 x 24 x 14, or 16 inches in depth. The edges of the sinks should be rolled over to prevent any sharp edges, and the backs extended up to 12 inches for a splash-back. At least one 24- or 30-inch drain board should be supplied for each sink.

THIS SERVICE COUNTER IN THE JACKSONVILLE HIGH SCHOOL SERVES APPETIZING FOODS QUICKLY AND WITH ECONOMY

At the end of the cooks' table an open steam table or bain-marie is provided to keep vegetables hot and ready to serve after being prepared. This is made with a copper pan stretched over 10-gage steel and mounted upon an angle-iron stand fitted with one shelf. A false bottom is provided over the coils or gas burners, and stone or china jars are used for containers. Over the cooks' table is hung a heavy iron bar saucepan rack upon which all heavy cooking utensils are hung. This is made of band

At left: Washington Heights, maintained with "Tarvia-B" since 1916.

Above: Du Bois Street, maintained with "Tarvia-B" since 1916.

Below: Benkard Ave., maintained with "Tarvia-B" since 1913.

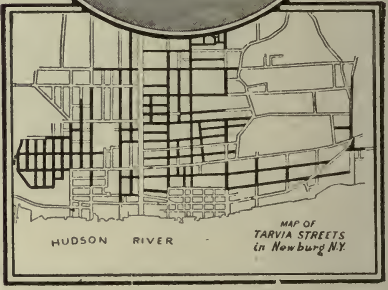
"Tarvia-B" makes good in Newburgh—

Benkard Avenue, pictured in the circle, was the first Tarvia street in the City of Newburgh, New York. The results were so satisfactory that in 1916 other macadam streets were given their initial Tarvia treatments. Not until last year, however, when the 18 miles of roadway shown on the accompanying street map were surfaced-treated with "Tarvia-B", was the use of all other kinds of road-maintenance materials entirely abandoned in favor of Tarvia.

Mr. W. J. McKay, City Manager, wrote under date of March 17, 1922:

> "It is with a great deal of pleasure that I inform you that the results obtained from the use of your 'Tarvia-B' on the streets of this city last season were more than satisfactory.
>
> "While we are always in the market for material cheaper than the material we used the preceding season, it would take a considerable difference in price to have us make any change in the product to be used for the season of 1922."

Economy must be the goal of every conscientious public official. And the officials of Newburgh, and hundreds of other cities and towns throughout the country, have found from experience that Tarvia is the most economical of all road materials.

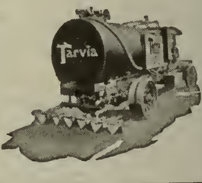


Tarvia

For Road Construction Repair and Maintenance

A Grade for Every Purpose

Tarvia is made in various grades for all road purposes—new construction, repairs and maintenance. An illustrated booklet telling of the different Tarvia treatments will gladly be sent free, on request.



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THE BARRETT COMPANY, Limited: Montreal Toronto Winnipeg Vancouver St. John, N. B. Halifax, N. S.

iron and supplied with three rows of large hooks.

Near the large refrigerator should be furnished a sectional maple cutting-bench and chopping-block. An average size for these is 48 x 30 inches for the bench and 24 x 24 inches for the block. One of the most convenient and serviceable machines that should be included in every equipment is a Buffalo chopper. This consists of a slowly rotating steel bowl in which two knives rapidly revolve. It is used for finely chopping raw or cooked meats and vegetables and does it without mashing them.

Tables and a slide are provided on the wall separating the kitchen from the counter. If only one slide is used, this should be back of the pastry counter. All cutting of bread, pastry and cakes should be done in the kitchen and passed through these slides to the counter. Here, too, the preparation of salads and serving of puddings, etc., into individual dishes is done. The service ice-box and a sink should be conveniently located near these tables. If possible, the sectional maple construction should be maintained for all kitchen tables.

The vegetable preparation should include, in addition to a maple table and a two-compartment sink, a vegetable peeler. One of these machines will soon pay for itself in saving of labor and potatoes. They come in various sizes, the 30-pound size being best suited to the single service unit.

The dishwashing pantry is the last to be considered, but by no means is it of least importance. Probably more money and thought have been expended in developing dishwashing machinery than in perfecting any other kitchen appliance. This has largely been due to the constantly increasing difficulty of securing the class of help which will perform this disagreeable task, and secondly to the demand for better and more sanitary dish washing.

The original machines were square or round tanks provided with a propeller at the side or bottom of the tank. This propeller was rapidly rotated, causing a violent whirlpool motion in the tanks, which cleansed dishes packed in wire baskets and immersed in the tanks. The more modern and sanitary method is to stack the dishes in trays which are pushed along on tracks over the tanks. A centrifugal pump or a mill-wheel propeller throws the water from the tanks over and over on the dishes. A final rinsing spray of hot water cleanses the dish of the wash water. A dishwashing machine is absolutely essential both as a labor-saver and a means of reducing dish and glass breakage.

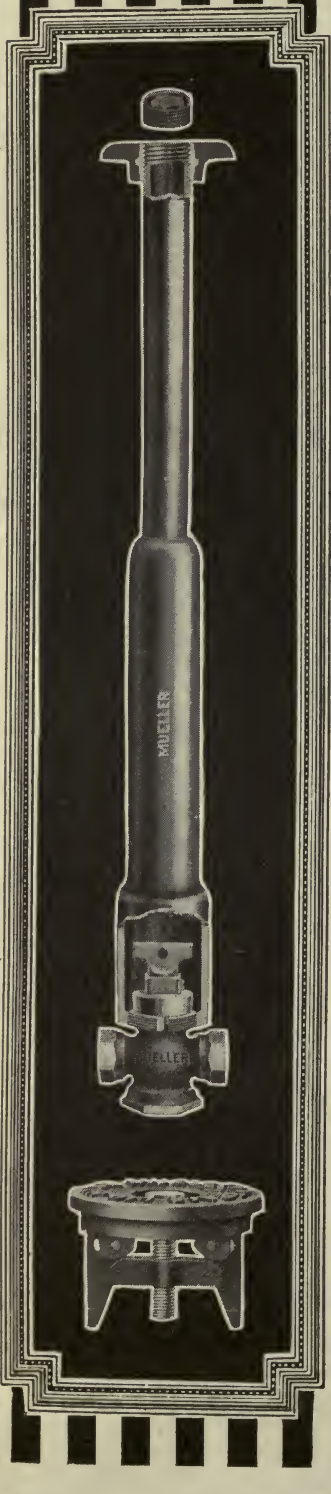
As important as the dishwashing machine itself is the set of tables which surrounds it. The tables may be of 14-gage galvanized iron and built in the shape of a shallow sink 4 inches deep with sloping sides mounted on 1¼-inch iron pipe standards and pitched to drain into the sinks and dish washer. The soiled end of the table should be provided with a 6-inch hole and a rubber-bound scraping block. Adjacent to it and built into the table there should be a two-compartment silver and glass sink measuring 36 x 18 x 12 inches. Over this as well as over the clean dish table may be placed an elevated metal shelf for stacking the glasses and silver when cleaned.

Adequate provision for hot water supply should be made for any dishwasher, as it will not operate properly with lukewarm or cold water. A 250-gallon tank for the dishwasher alone is none too large for a cafeteria serving 1,000 meals at noon. If hot water is plentiful, the dishes come out of the machine so hot that they will air-dry in a few minutes, so that no wiping is necessary. The dish pantry should be located adjacent to a door or slide leading to the dining-room, and an aisle in the dining-room should be provided for carrying the soiled dishes to this pantry.

It is not the purpose of this article to discuss the small equipment necessary, such as china, silver, glassware, linens, small kitchen goods, etc. Some suggestions, however, are advisable. Aluminum trays 14 x 18 inches are most practical. Silver should be at least 12 pennyweight on a nickel silver base, and china with a hard vitrified body and of hotel weight should be selected. Each table requires a sugar bowl, salt and pepper shakers and a vinegar cruet. Paper or butcher linen napkins should be provided at the counter.

An elastic composition tile floor is the best. Ventilation must be thorough and complete, and the more natural light and air that can be secured, the better.

As before stated, the complete single service unit here described has a capacity of



MUELLER Improved Extension Service Boxes

are made in various sizes and different lengths to meet every need. No. E-751 (patent applied for) here shown, is for use with Round Way Minneapolis Curb Cocks. Other patterns for other Cocks.

The special *MUELLER* construction overcomes all previously encountered difficulties with service boxes and insures quick access at all times.

MUELLER REPAIR LIDS

fit both new and old style Buffalo Service Boxes and provide a means for supplying a new lid to any box, regardless of condition of box top. An old box with a new *MUELLER* Lid (E-850, patented,) is a better box than when new.

Write for full descriptions and prices.

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about 200 every 15 minutes. If it is impossible to serve the pupils in shifts, it is well to add a second service if the number desiring meals at one time is liable to be 300 or over. This is easily done by a second counter, which is a duplicate of the first and can be arranged with reference to the kitchen in a horseshoe or, if the room permits, paralleling the kitchen walls. The students come from both sides of the room toward the center, where a double battery of urns does duty for both counters. Any multiple of this service can be arranged; as many as six double horseshoe units, twelve services in all, are used successfully in commercial or industrial installations.

The points to be watched particularly are: first, that simplicity should be the keynote; second, the equipment should be determined on the basis of the ultimate capacity of the school rather than its enrollment at the start; third, sufficient equipment to reduce labor should be provided; fourth, equipment should be of standard, sanitary construction, chosen for durability and long life.

Acknowledgment.—Illustrations by courtesy of Albert Pick & Company.

Non-Combustible Construction Protects School Buildings

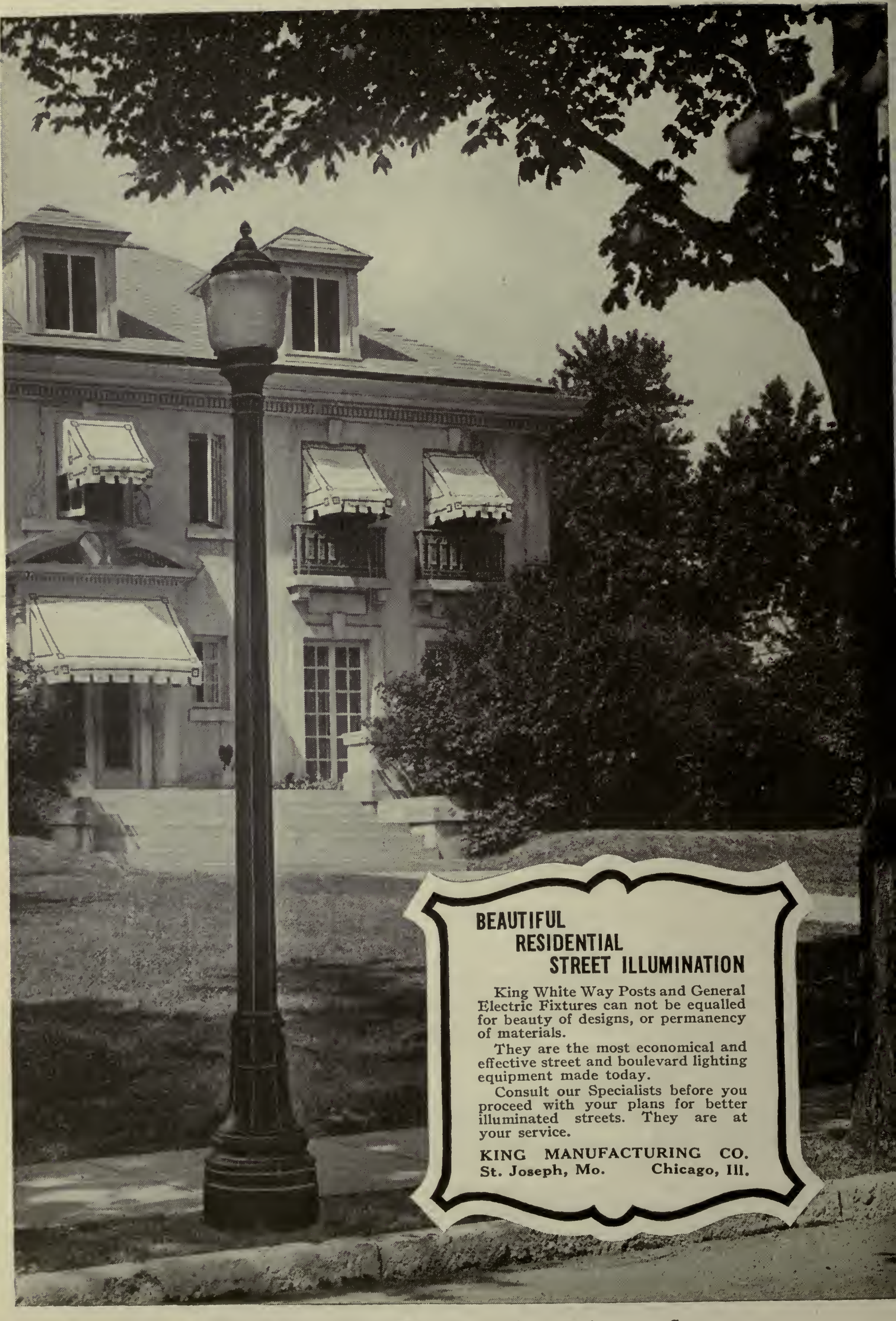
A Few Records of Schools That Were Saved Through Proper Construction

STORIES of instances where fire-resistive construction has saved school buildings from destruction by burning do not often get into the newspapers, for the reason that only the spectacular fires involving serious losses are considered as having news value. The Grand Rapids, Mich., *Press,* however, saw the news value of the statement made by the President of the Board of Education to the effect that reinforced concrete construction saved a school building in that city. He stated that the fire in the Coit School would have destroyed the entire building if it had originated in the old part instead of the new building. The blaze, which was caused by spontaneous combustion of mops which had been dipped in linseed oil and which the janitor had neglected to destroy, burned a hole of considerable size in the wooden floor, destroying some of the timbers and plaster beneath, and then put itself out when it reached the concrete base.

On October 28, 1921, in the Horticultural Building at the Pennsylvania State College, a fire broke out in the attic, which because of a shortage of space had been converted into a laboratory. The roof of the building was of wood construction, but the three main floors, as well as the attic floor, were of reinforced concrete. The firemen could offer but little resistance, since the water pressure was entirely inadequate. The contents of the laboratory and the roof of the building were destroyed. The reinforced concrete floors prevented the spread of the flames to the lower parts of the building. In the reports of the fire it was stated that there was no damage to the $200,000 building below the level of the attic floor, and the damage to the roof, the attic and the contents of the laboratory amounted to about $35,000; whereas, had the building been of combustible construction, it would in all probability have been completely destroyed, owing to the weakness of the water pressure.

Several months ago a fire broke out in the Byron Stolp grade school in Wilmette, Ill., a suburb of Chicago. The fire started in the boiler room, that prolific source of school fires. The wooden floor of the classroom immediately above the boiler room crashed into the basement, but the ceiling of this room, which was protected by portland cement plaster on metal lath, prevented the fire from breaking through the second floor.

Two of the walls of this classroom are outside walls, another wall is of heavy fireproof partition, and the fourth is a fireproof corridor wall. The door from the classroom into the corridor was not self-closing, but happened to be closed at the time of the fire, which occurred on a Sunday morning. Not the slightest damage was



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caused outside the boiler room and the single classroom. Had the floors of this building been of thoroughly fire-proof construction, the fire could not have spread beyond the boiler room, and the loss would have been practically nothing.

The National Fire Protection Association issued a four-page printed leaflet some time ago, illustrating and describing the fire in the high school at Arlington, Mass., on July 18, 1921. This fire resulted in a damage of about $25,000. The building was well constructed, as school buildings go, and was resistive to a fairly high degree, but several weak points, which would probably not have cost more than $3,000 to correct, permitted the spread of the fire to various parts of the building and resulted in considerable damage. In this instance failure to take the final step toward fire-resistive construction permitted the moderate damage which occurred.

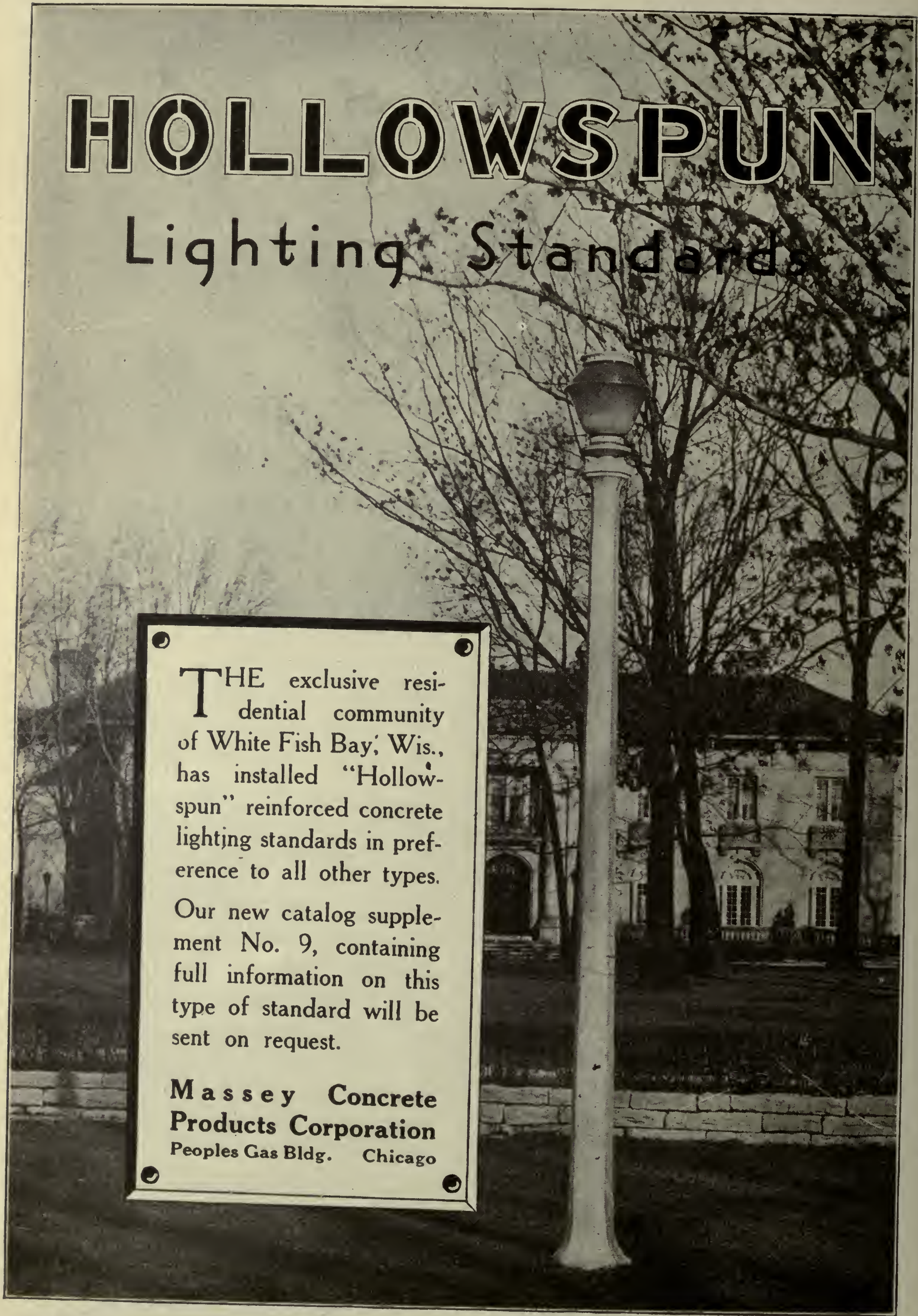
Buildings that refuse to burn down are a good public investment. This was well shown in Boonville, N. Y., where the high school was destroyed early in February of this year. The building was built in 1910 at a cost of $45,000. It had a combustible interior with exterior walls of masonry, a type of construction very commonly used in school buildings in this country. This entire interior was destroyed, and most of the exterior walls fell in. Destruction was complete. The value of the building, based on replacement cost, was estimated at somewhere between $80,000 and $100,000. Insurance was only $17,000, and the town still owes $10,000 on the destroyed building.

The Cold Patch Method of Maintaining Roads

Maintenance of Asphaltic and Concrete Roads Facilitated by New Material

OFFICIALS in charge of the construction and maintenance of our roads and streets have come to appreciate the tremendous importance of proper maintenance. Various methods for pavement up-keep have been developed. Among them is the cold patch method, which is being employed quite extensively throughout the United States, using bituminous materials developed by several different companies.

A FRESHLY MIXED BATCH OF COLD PATCH MATERIAL, AND THE CONCRETE MIXER IN WHICH THE MATERIAL IS PREPARED



HOLLOWSPUN

Lighting Standards

THE exclusive residential community of White Fish Bay, Wis., has installed "Hollowspun" reinforced concrete lighting standards in preference to all other types.

Our new catalog supplement No. 9, containing full information on this type of standard will be sent on request.

Massey Concrete Products Corporation
Peoples Gas Bldg. Chicago

Cold patch material contains an asphalt which is of the consistency of solid asphalt. For convenience in using, the asphalt is cut back with light volatile oil, which serves to thin it to the consistency of a liquid, so that it may be mixed cold and used without requiring the application of heat. After being exposed to the air for some time, the volatile matter evaporates, leaving the solid asphalt as a binder.

This material is mixed in certain definite proportions with stone screenings or a combination of screenings and sand, and the mixture is allowed to stand for several days until the thinning agent has evaporated and the batch has become thick enough to handle. The practice is to store several days' production in separate piles, so that a completely cured batch is ready for use each day. Mixing may be done in a small concrete mixer, although hand mixing may be employed when a mechanical mixer is not available. When a concrete mixer is used, the required amount of mineral aggregate is placed in the skip, and the necessary quantity of the binder added, followed by the rest of the stone. It takes from two to three minutes to thoroughly coat the stone. When the mixing is done by hand, the batch should be turned over until a homogeneous mixture is obtained.

Of first importance in the preparation of a batch of patching material is the employment of the proper amount of binder and stone, and, when it is used, of sand.

The town of Englewood, N. J., which has used Texaco cold patch, employs approximately 18 gallons of binder to the cubic yard of mineral aggregate, consisting of equal parts of ¾-inch and ½-inch stone screenings. This town has patched a number of its roads, using this mix, and has had very gratifying results. South Orange, in northern New Jersey, uses a different mix with equally satisfactory results. To every four wheelbarrow loads of ¾-inch stone are added 4 gallons of binder and 7 shovels of sand.

To secure the best possible patch, the area to be treated should be entirely free from moisture. All loose material should be removed from the hole or worn spot in the road, and the sides of the hole cut vertically to the bottom with an axe. This lessens the possibility of the creeping or shoving of the patch under traffic. The patching material is shoveled into the hole and raked out. A sufficient amount of material is used to give a patch which stands slightly above the rest of the pavement after it has been tamped and rolled. Traffic very quickly reduces it to the same level as the surrounding surface.

In patching holes having a greater depth than 3 inches, larger broken stone, preferably coated with the binding material, should be filled into the hole and tamped, bringing the bottom of the hole to within two or three inches of the surface. The patching material is then added in the regular manner. While it is not generally essential when coarse stone is used in the mix, it is advisable to give the completed patch a paint coat of the binder and to spread screenings free from dust over the repaired area and then roll.

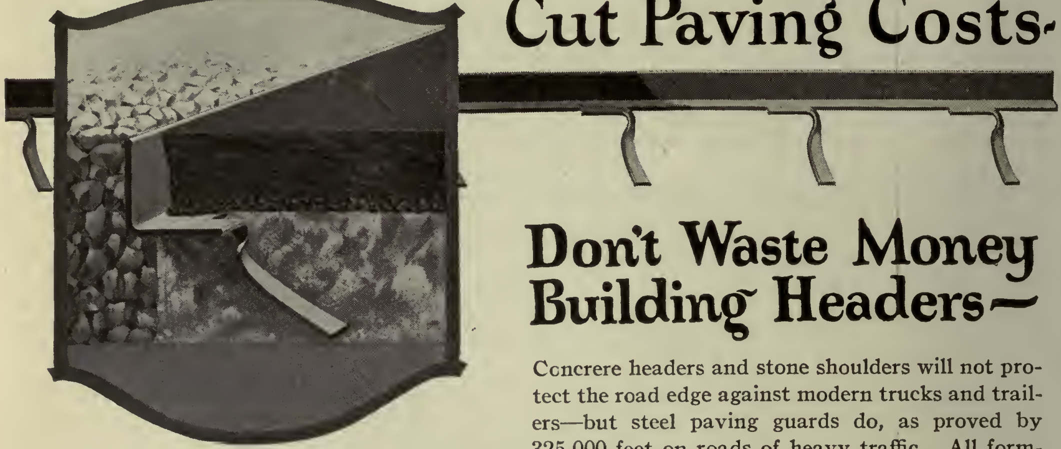
A patch laid in the manner outlined above, with the proper materials, will be found to be water-proof, resilient and adhesive. The method and materials may be used in patching any type of road, from water-bound macadam to the higher forms of bituminous construction, as well as brick and block types and cement concrete.

If the roads of our towns and cities are periodically inspected and weaknesses and disintegrations treated promptly with cold patch or a similar material, a great deal of money will be saved which may be devoted to the extension of our present highway systems.

Pennsylvania's Road Mileage

There are 10,777 miles of state highways in Pennsylvania. Of these, 5,378.87 miles are earth roads, 190.2 are gravel, 155.7 are of flint, 2,089.5 are water-bound macadam with broken stone base, 828.3 are water-bound macadam with telford base, 218 miles are of bituminous macadam, and 115 miles are of bituminous concrete. There are 68.16 miles of bituminous concrete with telford base, 58.4 of asphalt with broken stone base, 70 miles of plain concrete, and 1,086 miles of reinforced concrete. The mileage of vitrified block roads is 383 miles, of the wood block 3.7, and of the stone block 4.5 miles.

International Steel Paving Guards Cut Paving Costs-



Don't Waste Money Building Headers—

Concrere headers and stone shoulders will not protect the road edge against modern trucks and trailers—but steel paving guards do, as proved by 325,000 feet on roads of heavy traffic. All forming for headers eliminated. Built of structural angle with inch-wide anchors twisted and bent like reinforcing bars. Adapted to all surfaces and foundations.

Circular on request.

CIRCULAR ON REQUEST.

International Steel Tie Co., Cleveland, O.

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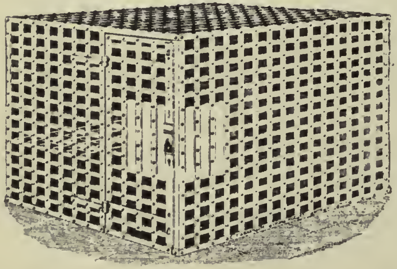

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GURLEY

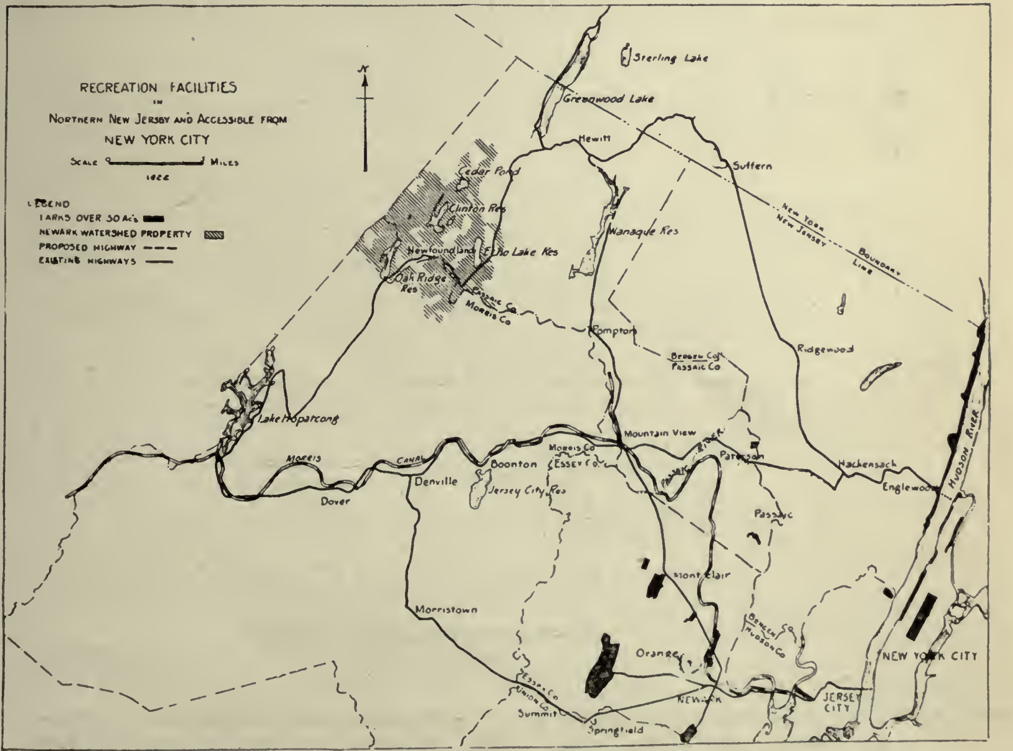
The Morris Canal and New Jersey's Opportunity

By Harold M. Lewis

Of the Physical Survey, Plan of New York and Its Environs

THAT part of northern New Jersey included in the studies being made by the Committee on a Plan of New York and Its Environs had in 1920 a population of 2,346,851. More than three-quarters of these people live in that part of the state shown in the accompanying drawing. Winding through the business, residential and rural districts is the route of the Morris Canal, which has ceased to be a commercial waterway of any importance. The physical survey being made by the Committee points out the opportunity which the people of New Jersey have to turn this practically abandoned ditch into an unusual public asset.

Chartered in 1824 for 99 years, the original grant provides that at the end of this period, which is on December 31, 1923, the state may acquire the canal and all its rights by paying a fair value. If this right is not exercised within a year from that date, the charter is automatically renewed for 50 years, at the expiration of which period the canal and its appurtenances would revert to the state. In 1871 the State Legislature authorized a lease of the Morris Canal property to the Lehigh Valley Railroad, and there is some doubt as to how this lease would affect the recapture by the state. The company is desirous of maintaining for railroad purposes the two ends



NORTHEAST CORNER OF NEW JERSEY, SHOWING THE ROUTE OF THE MORRIS AND ESSEX CANAL AND THE MANY COMMUNITIES IT TOUCHES

Electric Light and Power Plant at Miles City, Mont., and two of the 47 buildings now heated by steam that was formerly wasted.

Waste Steam Used for Community Heating

AFTER facts brought out in court showed that Miles City, Montana, was losing more than $100 a day by not selling exhaust steam, permission was given the electric station to proceed with a plan for distributing this waste steam to heat nearby buildings.

A bulletin has been prepared showing the development of this profitable municipal venture. Today, some 47 buildings are heated from the central station plant. Heat sales run over $32,000 a year. Fire hazards are reduced because individual heating plants are thrown out of these buildings. Dirt and dust of coal and ash handling are eliminated. This is one of over four hundred installations of Community Heating designed and installed by our engineers.

If there is an electric light plant or factory in **your** city wasting steam, why not use it to heat nearby buildings? Buy your steam heat as you buy gas or electricity—by meter!

Write for Bulletin No. 20-AC covering Adsco Community Heating of a group of buildings from Central Station Steam Plant. Bulletin No. 158-AC covers Adsco Heating for individual buildings. Architects, engineers and heating dealers should also ask for Bulletin No. 159-AC.

AMERICAN DISTRICT STEAM COMPANY
GENERAL OFFICES AND WORKS
NORTH TONAWANDA, N.Y.
OFFICES:
New York Chicago Seattle St. Paul

ADSCO HEATING

of the line, that (not shown on the drawing) in Hudson County, and that in Phillipsburg on the Delaware River, and is understood to be willing to turn over the rest of the property, with all the shares, stocks, bonds and scrip which it owns, to the state, which should, however, condemn the outstanding stock, about 680 shares.

The final use of the canal property has already been discussed by three State Commissions, known as those of 1903, 1911 and 1912. The Board of Engineers of the Jersey City Development Plan and the Port of New York Authority have recommended that the portion of the canal in Hudson County be converted into a motor truck highway. The remainder of it seems to offer the most advantages if used for recreational and park purposes.

Essex and Hudson Counties have accomplished much toward building up comprehensive park systems, but these should be expanded into other counties and linked together in a unified whole. What could be a more useful part of this enlarged system than a continuous strip of publicly owned property developed with one or two well-constructed driveways bordering a waterway excellently adapted to canoeing, boating, and, at certain points, to bathing? In the metropolitan area alone it would link up with the congested areas such beauty-spots as Lake Hopatcong and the hills of Morris County. Already existing roads lead from it to the large areas on the Pequannock River owned by the city of Newark for water-supply purposes, the natural beauty of which will thereby be preserved and enhanced, while these same roads, skirting the new Wanaque reservoir and Greenwood Lake, extend to the immense pleasure grounds of the Palisades Interstate Park Commission and reach the Hudson at Bear Mountain.

At the more densely populated communities through which the canal passes, such as Newark, Bloomfield and Paterson, excellent opportunities would be offered for the expansion of the parkway into larger local parks. By an ultimate development of the western part of the canal along similar lines, there would result an automobile route leading to the Delaware River and the West that would rival any similar highway in existence. Its certain popularity can hardly be questioned, and the increased values along its borders would be an immense financial gain to the state and the local communities.

This great metropolitan district must plan for the future. Is it not more reasonable to act now than to allow the whole question of the disposition of the Morris Canal to lapse for another fifty years?

Thomas Adams to Spend Several Months in America

THOMAS ADAMS, of England and America, is coming to Boston early in January as Lecturer on Civic Design to the Massachusetts Institute of Technology. In addition to conducting this course, Mr. Adams expects to be available for occasional lectures and consultation on city and regional planning in other American communities during at least the first four months of 1923. To carry on his work in England, Mr. Adams has entered into partnership with Longstreth Thompson, B.Sc., Municipal Engineer and Architect. The firm will practise as town planning consultants and will work in close collaboration with Thomas H. Mawson & Sons, architects and landscape architects, of Lancaster, England.

On the Calendar of Conventions

November 14-16.—Kansas City, Mo.
City Managers' Association. Annual convention. Secretary, Paul R. Wilcox, City Hall, East Cleveland, Ohio.

November 23-25.—Philadelphia, Pa.
National Association of Civic Secretaries. Annual convention. Secretary, Francis T. Hayes, City Club, Hollenden Hotel, Cleveland, Ohio.

November 23-25.—Philadelphia, Pa.
National Municipal League. Annual meeting. Secretary, H. W. Dodds, 261 Broadway, New York, N. Y.

December 1-2.—Lakewood, N. J.
New Jersey Sanitary Association. Annual meeting. Secretary, Edward Guion, Bureau of Health, City Hall, Atlantic City, N. J.

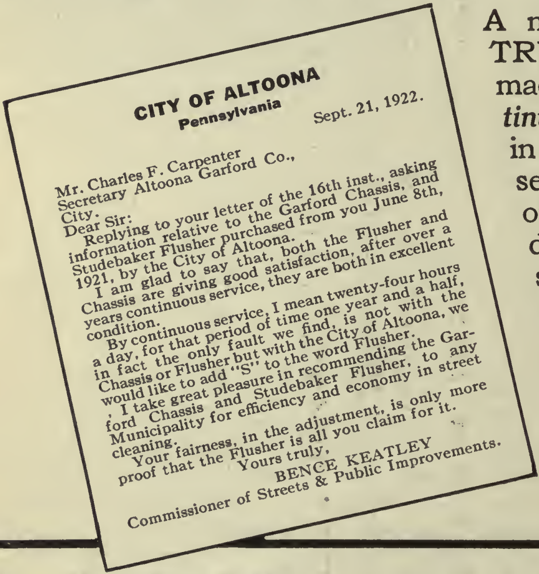
December 4-7.—Kansas City, Mo.
American Association of State Highway Officials. Annual meeting. Secretary, C. M. Upham, State Highway Engineer, Raleigh, N. C.

December 7-8.—Washington, D. C.
National Civil Service Reform League. Annual meeting. Secretary, H. W. Marsh, 8 West 40th Street, New York, N. Y.

January 15-19.—Chicago, Ill.
American Road Builders' Association. Annual convention. Secretary, E. L. Powers, Editor "Good Roads," 11 Waverly Place, New York, N. Y.

Over a year of night and day running in Altoona, without a break.

Giving *Continuous* Service in Altoona



CITY OF ALTOONA
Pennsylvania

Sept. 21, 1922.

Mr. Charles F. Carpenter
Secretary Altoona Garford Co.,
City.

Dear Sir:

Replying to your letter of the 16th inst., asking information relative to the Garford Chassis, and Studebaker Flusher purchased from you June 8th, 1921, by the City of Altoona.

I am glad to say that, both the Flusher and Chassis are giving good satisfaction, after over a years continuous service, they are both in excellent condition.

By continuous service, I mean twenty-four hours a day, for that period of time one year and a half, in fact the only fault we find, is not with the Chassis or Flusher but with the City of Altoona, we would like to add "S" to the word Flusher.

I take great pleasure in recommending the Garford Chassis and Studebaker Flusher, to any Municipality for efficiency and economy in street cleaning.

Your fairness, in the adjustment, is only more proof that the Flusher is all you claim for it.

Yours truly,
BENCE KEATLEY
Commissioner of Streets & Public Improvements.

A model 68-D GARFORD TRUCK carrying a flusher, has made an enviable record in *continuous-night-and-day* running in Altoona, Pa. Two years service in one—under all kinds of weather and climatic conditions, this GARFORD is showing the customary dependability for which they are known.

Read what Mr. Bence Keatley, Commissioner of of Streets and Public Improvements says in his letter.

The Garford Motor Truck Company, Lima, Ohio

Manufacturers of 1, 1½, 2½, 4, 5, and 7½ Ton Trucks

GARFORD

DEPENDABLE TRANSPORTATION

It will interest you to know that—

Michiganders Like Matrimony

Eleven out of every 13 married persons in Michigan are contented with matrimony, judging from the 1921 divorce and marriage records compiled by the State Department of Health. Two out of every 13 contemplate annulment of their marriages.

These ratios are based on 41,508 marriage and approximately 7,632 divorce records recorded in the state in 1921. In 1920 there were 50,805 marriages and 8,679 divorces. The 1918 and 1919 ratios of one court ending to every six matrimonial ventures increased during 1920 to one divorce to every 5.9 couples married, and last year to one divorce to every 5.5 marriages.

Buenos Aires Cops Welcome Strangers

The city of Buenos Aires, Argentine, maintains a police corps known as "First Aid to Foreigners." These men are police interpreters assigned to railroad stations, landing places and public buildings, as well as other places frequented by foreigners. Each man wears on his left sleeve a badge with the flag of the nation whose language he speaks. This system is well known to tourists in some European countries, particularly Germany, where the same system proves very helpful to the foreign traveller.

Fire Prevention Inspectors in New York Have Organized

Ten years ago few would have dreamed that there could be in any American city an organization of fire prevention inspectors, but such has recently come about in New York City, where the men in the Bureau of Fire Prevention, feeling the need for closer cooperation among themselves, have organized the New York City Fire Prevention Inspectors Association. The purposes of the Association are to advance the science and practice of fire prevention by educating the public and establishing effective relations between the Bureau of Fire Prevention and the property owner; to provide a closer and more practical cooperation between the various inspectional departments of the city and state in the matter of fire prevention; and to recommend and assist in promoting and simplifying legislation for the purpose of preventing the destruction of life and property by fire.

Referenda Sometimes Fail to Register

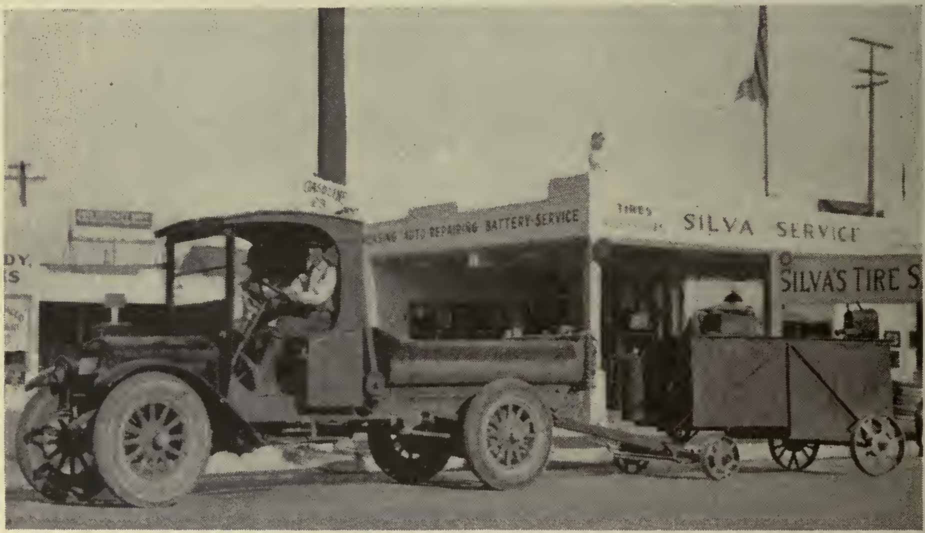
On the ground that no one can tell whether the citizens of Newark, N. J., in a referendum of November, 1920, voted for a municipal heating plant, a lighting plant, a power plant, or a combination of any two or all three, the Supreme Court recently declared void the referendum, and Newark is back where it was before the vote was taken. The Court, in its decision, pointed out that "the resolution must state definitely the character of the plant necessary, and clearly indicate the purpose of the referendum." Merely to provide that the voters shall be restricted to "yes" or "no" on a general proposition of "a municipal plant for heat, light and power" is not sufficient. The city officials who have to do with the preparation of questions on which the voters have demanded a referendum will do well to consider this recent decision, and to take special care to frame the questions so that there may be no possibility of misconstruction.

Englewood Has a Unique Housing Enterprise

Broadacres Incorporated, of Englewood, N. J., is a housing development with some rather interesting features. Some Englewood people, realizing the rather discouraging housing situation in the vicinity of New York, formed an association, purchased 14 acres, divided the property into 40 lots, each approximately 80 feet wide and 120 feet deep, provided for streets 50 feet wide, and are selling the lots subject to the following restrictions:

Each purchaser must purchase two shares of stock per lot in the corporation and must submit plans of his house to the architect of the corporation for his approval. The cost of improvements outside the lot line, namely, sidewalks, streets, sewerage, water, gas, electric light, telephone mains, will be prorated. The corporation further reserves the right to reject any application. While Broadacres does not resemble the English cooperative housing experiments, it will nevertheless be watched with interest by students of housing in America because of these special features.

General Motors Trucks



G M C one-ton used as utility truck by city of Pomona, California

GMC Is Good Investment, Say Officials of Western Town

"One of the best investments ever made by this city is its G M C truck." In this manner do Mayor T. R. Ovington and City Engineer Fred C. Froehde, Pomona, California, express their appreciation for the service rendered by the little K16 Model G M C truck which acts as a general utility vehicle in all the city departments.

"First of all," says Engineer Froehde, "the G M C won out on merit at the time we made our purchase. We placed the order on strictly a competitive basis and made all of the competing trucks undergo a strenuous test. We hitched a road drag to the empty trucks, had eight or nine heavy men climb on the drag and then tried pulling that load through some mighty nasty mud. There were quite a number of trucks in the competition but the little G M C was the only one that got right down into the collar and did the trick.

On the Job Continuously

"Since we put it in service there hasn't been a day when we regretted our decision. It has been on the go continuously in all departments of the city and has never yet laid down on the job.

"Equipped with a dump body it has proven particularly useful in all classes of work, and beside caring for all ordinary hauling for the city it has been able to care for our street repair work without any assistance.

Works With Trailer

"That street repair job is some task for a truck in itself. First we load the dump body with a full load of granite screenings, which weight pretty heavy, then we hook on the asphaltum trailer that weighs almost four tons. This trailer is an ingenious contrivance that keeps the tar and asphalt heated to the proper temperature for making road repairs.

"The use of this combination makes for economy of our street repairs. First of all it has the power and the speed to get around over the city in a short time, regardless of the conditions of travel, and carries enough material to keep a crew busy all day without returning for supplies."

G M C chassis list at the factory as follows:—one ton, $1295; two ton, $2375; three and one half ton, $3600; five ton, $3950; tax to be added.

GENERAL MOTORS TRUCK COMPANY
Division of General Motors Corporation
Pontiac, Michigan
DEALERS AND SERVICE IN MOST COMMUNITIES

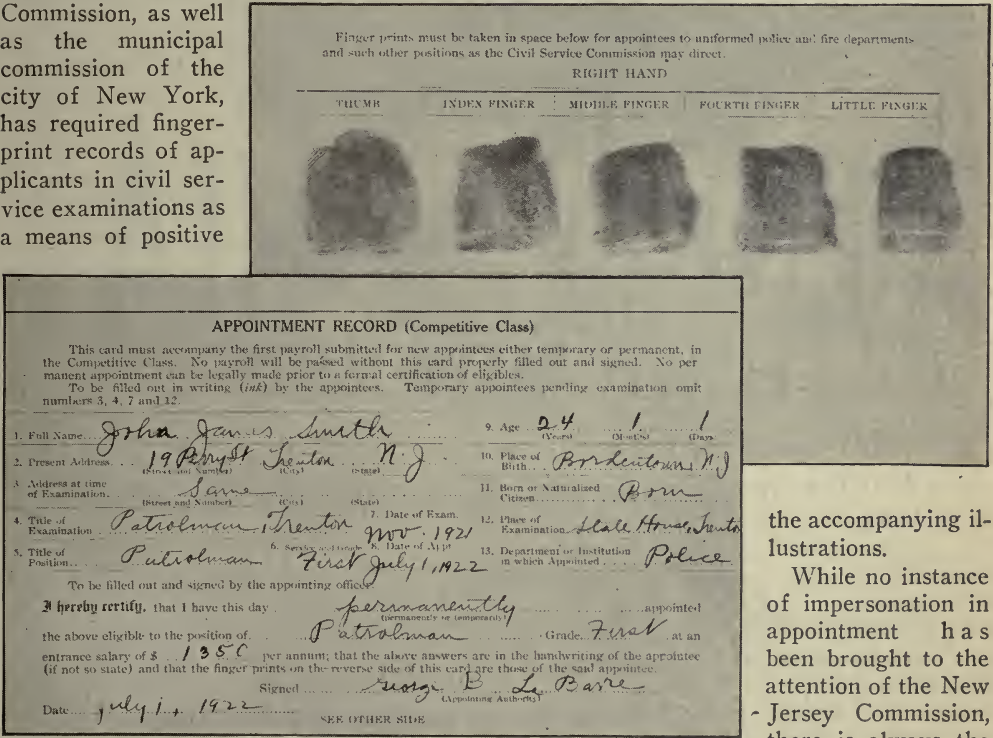
The Finger-Print Method of Identification in New Jersey

By Charles P. Messick

Chief Examiner and Secretary, State Civil Service Commission

THE practical value of the finger-print method of identification is again instanced by the recent ruling of the New Jersey State Civil Service Commission that appointment records of members of the uniformed police and fire departments in the several municipalities of the state shall contain finger-print records of appointees.

For a number of years the New Jersey State Civil Service Commission, as well as the municipal commission of the city of New York, has required finger-print records of applicants in civil service examinations as a means of positive identification, for the checking up of possible criminal records of applicants and for the purpose of preventing impersonation in some part of examination tests.



FORM OF RECORD USED BY THE NEW JERSEY STATE CIVIL SERVICE COMMISSION

Finger prints must be taken in space below for appointees to uniformed police and fire departments and such other positions as the Civil Service Commission may direct.

RIGHT HAND

THUMB	INDEX FINGER	MIDDLE FINGER	FOURTH FINGER	LITTLE FINGER

APPOINTMENT RECORD (Competitive Class)

This card must accompany the first payroll submitted for new appointees either temporary or permanent, in the Competitive Class. No payroll will be passed without this card properly filled out and signed. No permanent appointment can be legally made prior to a formal certification of eligibles.

To be filled out in writing (*ink*) by the appointees. Temporary appointees pending examination omit numbers 3, 4, 7 and 12.

1. Full Name John James Smith
2. Present Address 19 Perry St (Street and Number) Trenton (City) N. J. (State)
3. Address at time of Examination Same (Street and Number) (City) (State)
4. Title of Examination Patrolman, Trenton
5. Title of Position Patrolman
6. Service and Grade First
7. Date of Exam. Nov. 1921
8. Date of App't July 1, 1922
9. Age 24 (Years) 1 (Months) 1 (Days)
10. Place of Birth Bordentown N. J
11. Born or Naturalized Citizen Born
12. Place of Examination State House, Trento
13. Department or Institution in which Appointed Police

To be filled out and signed by the appointing officer.

I hereby certify, that I have this day permanently (permanently or temporarily) appointed the above eligible to the position of Patrolman Grade First at an entrance salary of $ 1350 per annum; that the above answers are in the handwriting of the appointee (if not so state) and that the finger prints on the reverse side of this card are those of the said appointee.

Signed George B. Le Barre (Appointing Authority)

Date July 1, 1922

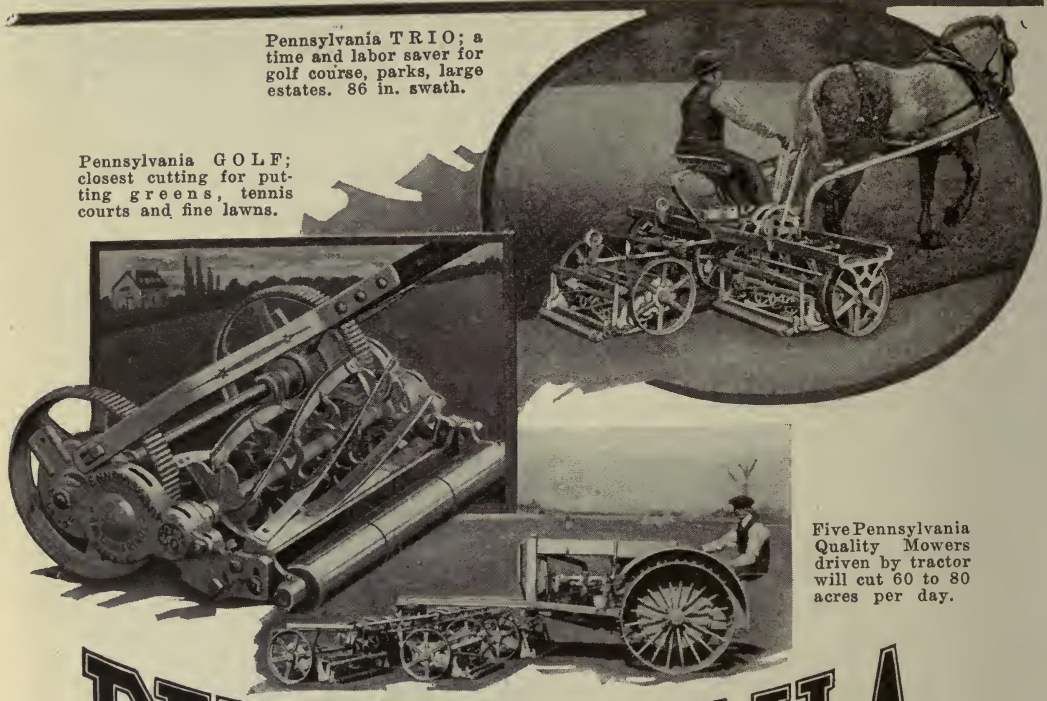
SEE OTHER SIDE

The New Jersey State Commission now proposes to complete the applicant's record, and insure positive identification of the appointee by requiring the finger prints as well as other data at the time of appointment. The appointee's record will then be compared with the examination record, and there will be positive assurance in every instance that the person appointed is actually the person who was earlier examined by the Commission.

The form of record required is shown in the accompanying illustrations.

While no instance of impersonation in appointment has been brought to the attention of the New Jersey Commission, there is always the possibility, and for this reason the new departure respecting the appointment record has been adopted.

It is expected that this method of identification will be gradually extended, both in examination and appointment in the state and municipal service, until it shall include practically every group of positions.



Pennsylvania TRIO; a time and labor saver for golf course, parks, large estates. 86 in. swath.

Pennsylvania GOLF; closest cutting for putting greens, tennis courts and fine lawns.

Five Pennsylvania Quality Mowers driven by tractor will cut 60 to 80 acres per day.

PENNSYLVANIA
QUALITY
LAWN MOWERS

THE record of long years of service back of Pennsylvania Quality assures the utmost in operative satisfaction under any and all conditions.

Every part of every mower is made with that care and accuracy which has been the foundation stone of Pennsylvania prestige from the very start.

Designed for longest service they are the most economical lawn mowers you can buy. Their having self-sharpening, crucible, tool steel blades, is but one reason out of many for the preference of men who know what a good lawn mower should be.

Write for "Pennsylvania TRIO Book"

Pennsylvania Lawn Mower Works, Inc.
1615 North 23rd Street, Philadelphia

The City's Legal Rights and Duties

Information for City Attorneys and Other Municipal Officers, Summarizing Important Court Decisions and Legislation

Conducted by A. L. H. Street, Attorney at Law

Ordinance Requiring Installation of Automatic Sprinklers Upheld

An ordinance of the city of Chicago requiring certain classes of buildings to be equipped with automatic sprinkler systems, in the interest of fire prevention, was upheld by the Illinois Supreme Court in the case of City of Chicago vs. Washingtonian Home of Chicago, 124 Northeastern Reporter, 416. Defendant conducts an inebriates' home and successfully litigated a claim that the ordinance was unreasonable as applied to such an institution. The Court said:

"The ordinance in question is not subject to the objection urged. The sprinkler apparatus is designed to prevent the spreading of fire and to put out fires in their incipient stages, and the testimony in this record tends to establish that they are efficient in so doing. Any regulation which tends to lessen the damage and dangers of fires and prevent the spreading thereof in densely populated cities is one which tends toward the protection of life and property of the public, and is therefore, unless oppressive and unreasonable, a proper exercise of police power. The ordinance in question is not shown by the record to be oppressive in its application to appellant. It owns and is possessed of valuable property at the corner of Madison and Ogden Avenues, in the city of Chicago. This, the evidence shows, is a populous section of the city. The building is occupied by patients suffering from the effects of alcohol, making it necessary to have a large portion of the windows barred with iron grates. The evidence also shows that windows to the fire-escapes are thus grated and are padlocked. The nature of the ailment of the patients in this building is such as to make them at times unruly and difficult to handle. Especially would this appear to be true in the case of fire. The cost of the installation of this system in appellant's property is shown to be about $5,500, while the value of the property is shown by the record to be considerably over $150,000. The record also shows that a saving in insurance premiums, owing to the installation of a sprinkler system, would pay the expense of such system in approximately 30 years. Considering these facts, together with the fact that such system is a protection to the property of appellant, it becomes apparent that such requirement is not oppressive. The ordinance is general in its application. It applies to all buildings coming within the character of the one described by its terms, and therefore cannot be said to be discriminatory."

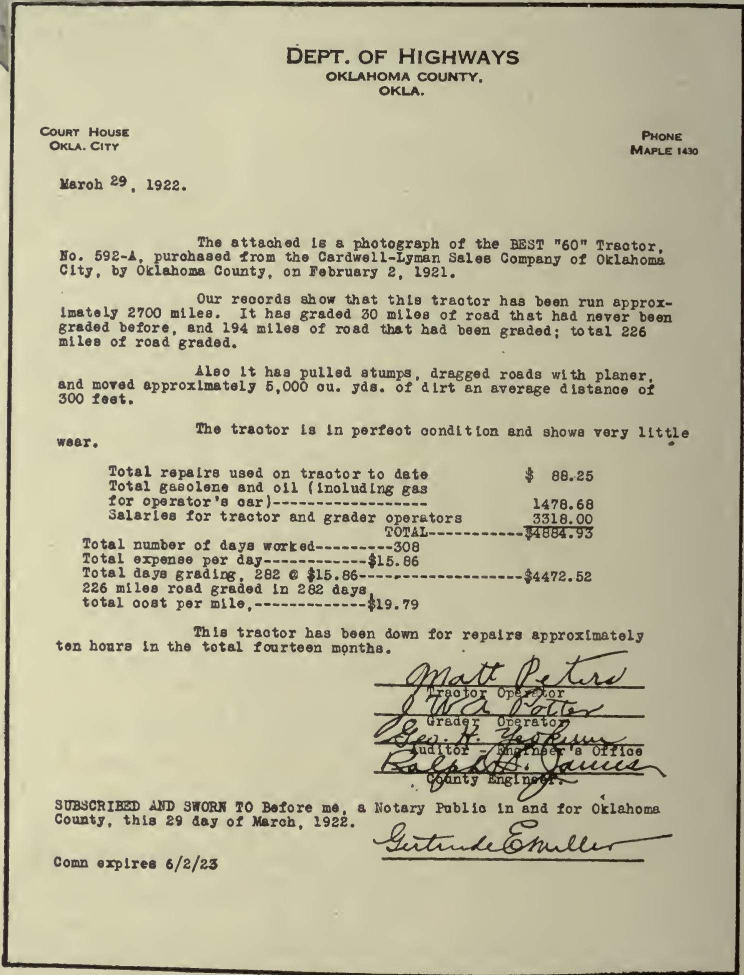
Establishment of a Sanatorium for the Tuberculous in a Residential District Restrained

The opinion of the Michigan Supreme Court in the case of Brink vs. Shepard, 184 Northwestern Reporter, 404, determines that owners of property in the residential section of a city are entitled to maintain suit to restrain establishment of a near-by tuberculosis sanatorium. It seems to follow that the decision is authority for the validity of an ordinance forbidding establishment of such institutions in residential districts. The Court says:

"The maintenance of a hospital for the treatment of this communicable disease in a strictly residential district cannot fail to deprive residents of near-by homes of the comfort, well-being, and enjoyment of their homes to which they are entitled, and this, coupled with their financial loss, justifies an appeal to a court of equity for relief."

Ordinance Requiring Permit Before Establishing a Laundry, Declared to be Valid

Clauses in the Minneapolis charter giving the city council power to make and enforce ordinances for the government and good order of the city, to regulate the construction of buildings, and to penalize creation and continuance of nuisances, are held by the Minnesota Supreme Court to support the validity of an ordinance prohibiting the operation of a laundry within the city limits without first obtaining a permit from the council. It is also decided that the ordinance is not unconstitutional as being unjustly discriminatory in that by its express terms it does not apply to buildings used for laundry purposes when the ordinance was adopted. (State vs. Dirnberger, 187 Northwestern Reporter, 972.)



DEPT. OF HIGHWAYS
OKLAHOMA COUNTY,
OKLA.

COURT HOUSE
OKLA. CITY

PHONE
MAPLE 1430

March 29, 1922.

The attached is a photograph of the BEST "60" Tractor, No. 592-A, purchased from the Cardwell-Lyman Sales Company of Oklahoma City, by Oklahoma County, on February 2, 1921.

Our records show that this tractor has been run approximately 2700 miles. It has graded 30 miles of road that had never been graded before, and 194 miles of road that had been graded; total 226 miles of road graded.

Also it has pulled stumps, dragged roads with planer, and moved approximately 5,000 cu. yds. of dirt an average distance of 300 feet.

The tractor is in perfect condition and shows very little wear.

Total repairs used on tractor to date	$ 88.25
Total gasolene and oil (including gas for operator's car)------------------	1478.68
Salaries for tractor and grader operators	3318.00
TOTAL------------	$4884.93
Total number of days worked---------308	
Total expense per day------------$15.86	
Total days grading, 282 @ $15.86-------------------	$4472.52
226 miles road graded in 282 days, total cost per mile,-------------$19.79	

This tractor has been down for repairs approximately ten hours in the total fourteen months.

Matt Peters
Tractor Operator
J W A Potter
Grader Operator
Geo. H. Yeskum
Auditor - Engineer's Office
Ralph H. James
County Engineer.

SUBSCRIBED AND SWORN TO Before me, a Notary Public in and for Oklahoma County, this 29 day of March, 1922.

Gertrude E Miller

Comn expires 6/2/23

Write for full data, prices and the names of our nearest dealers. Let us give you the details of how economically Best Tractors build and maintain streets and roads.

C. L. BEST TRACTOR CO.

SAN LEANDRO, CALIFORNIA

Distributing Warehouses

ST. LOUIS, MISSOURI
818 North Second Street

PORTLAND, OREGON
East Salmon and Water Streets

BEST TRACTORS

Municipal and Civic Publications

Prices do not include postage unless so stated

MOSQUITO ERADICATION

W. E. Hardenburg, Sanitary Engineer, McGraw-Hill Book Co., Inc., New York, 1922. IX + 248 pages, illustrations and diagrams. $3.00.

A well-written and practical treatise on the subject of mosquito eradication. A book well suited to the needs of public health officials in all parts of the country troubled with these pests. The chapters take up the diseases spread by mosquitoes and then discuss disease-bearing American mosquitoes, control measures, needs for initiating eradication campaigns, administrative aspects of the campaign, inland drainage, salt marsh drainage, oiling, the control of mosquitoes through the use of fish, screening for houses, and other measures and expedients, and points requiring investigation. The closing chapter deals with the rural mosquito and malaria control in country districts. The four appendices include a table to determine the species of certain common American mosquitoes, an approved anti-mosquito ordinance, and a suggested anti-mosquito leaflet for campaign educational work, as well as a bibliography of literature on mosquito control and eradication.

HYDRAULIC DIAGRAMS FOR THE DISCHARGE OF CONDUITS AND CANALS

Theodore Horton and the late Charles H. Swan. Third Edition, revised and enlarged. McGraw-Hill Book Company, Inc., New York, 1922. 53 pp. Price, $1.00.

The latest revision of these well-known hydraulic diagrams contains one notable change, namely, the inclusion of three new diagrams representing sections of more recent and useful types of aqueduct sections, namely, the semi-elliptical, parabolic and semi-circular sections. The new diagrams replace the one of the horseshoe section of the Croton Aqueduct, which has been omitted because of its similarity to the diagram representing the horseshoe section of the Wachusett aqueduct.

DRAINAGE ASSESSMENTS

''Drainage Assessments: Their Imposition and Their Collection Under the North Carolina Drainage Laws,'' by Frank Nash, Assistant Attorney-General of North Carolina. Circular No. 4 of the Drainage and Reclamation Division of the North Carolina Geological and Economic Survey. August, 1922. 11 pp. On account of the uncertainty of duties and authority of those authorized to act under the North Carolina Drainage Law of 1909, this address was given at the Twelfth Annual North Carolina Drainage Convention, at Goldsboro, April, 1922. (Apply to Joseph Hyde Pratt, Director, North Carolina Geological and Economic Survey, Chapel Hill, N. C.)

STREET RAILWAY FRANCHISE IN SAN DIEGO

''Have the People of San Diego a Voice in the Government and Control of the Street Railway in San Diego?'' By Shelley J. Higgins, City Attorney. ''The Common Council of the city of San Diego under its charter powers has authority, first, to regulate under its police powers the routing and operation of street cars in the city of San Diego, and, second, to insert as reasonable conditions contractual provisions in the franchise requiring that said electric railway company route and operate its cars in such manner as will best protect the public and promote the convenience, not only of car patrons, but the public at large who have occasion to use our streets.'' 13 pp. (Apply to author.)

THE SANITARY CONDITION OF NEW YORK HARBOR

By Kenneth Allen, Sanitary Engineer, Board of Estimate and Apportionment, Municipal Building, New York, N. Y. 10 pp. Illustrated. ''The situation regarding harbor pollution has received careful and continued attention for nearly 20 years, and * * * with one exception the general features of a plan for main drainage and sewage disposal for New York are pretty well defined. * * * what has been accomplished in recent years has been in line with the general plan, so that the city will not be called upon to abandon or reconstruct the work at a later date.'' (Apply to author).

THE SMOKELESS CITY

E. D. Simon, Lord Mayor of Manchester, England, and Marion Fitzgerald, Formerly Sanitary Inspector and Health Visitor to the Woolwich Borough Council. Longmans, Green and Co., 39 Paternoster Row, London, E. C. 4; also New York. 1922. IX + 82 pp. Preface by Lord Newton, Chairman of the Departmental Committee on Smoke Abatement. 50 cents.

Dealing mainly with the problem of domestic smoke in Great Britain, ''which is far worse and in some respects more difficult to deal with than factory smoke.'' A determined effort to replace ''the dirty, wasteful and unscientific habit of burning raw coal,'' with cleaner, more economical and scientific methods. The damage done by smoke is shown and the inefficiency and discomfort of burning raw coal for household needs are made clear. Under the headings of the three services for which heat is needed in a house—warming the house, heating the water-supply, and cooking—different systems are discussed, which range from entire smokelessness down to methods which, though not completely smokeless, are labor-saving and a great improvement on the use of coal fires. Suggestions are made for work for domestic smoke abatement, under five headings—research, education of the public, cheap gas and coke, municipal houses, and prohibitive legislation. The book shows the result of detailed health inspection of homes and a sympathetic knowledge of the conditions of the housewife's daily labors.

RAMSHACKLE COUNTY GOVERNMENT

Under this title, ''the plague spot of American politics'' is treated by Richard S. Childs incisively. ''Over all the operations of the county government lie a great pall of silence and an utter absence of public opinion.'' ''A satisfactory solution of the many problems can be worked out only by a steady process of evolution, under conditions that give scope for experiment, free from needless Constitutional restrictions.'' 28 pp. 1 diagram. Published by the National Municipal League, 261 Broadway, New York, N. Y. Price 10 cents; $5 per 100. (Apply to the publishers.)

STANDARD ZONING LAW

The Department of Commerce model for an enabling act under which municipalities can adopt zoning regulations is a 20-page mimeographed document, with footnotes covering questions which might arise in the wording of various sections and provisions. It is not a Federal law, but a suggested form for state zoning enabling acts. Free of charge. (Apply to the Division of Building and Housing, Department of Commerce, Washington, D. C.)

CITY PLANNING IN ST. LOUIS

Annual Reports of the City Plan Commission of St. Louis, Mo., for the years ending April 11, 1921, and April 10, 1922. Covering the progress made in zoning and in the execution of the Major Street Plan, also legal and financial procedure on street openings and widenings, a study of traffic growth in St. Louis, and adopted regulations concerning the subdivisions of land. 26 pp. Map and diagrams. (Apply to Harland Bartholomew, Engineer, City Plan Commission, St. Louis, Mo.)

MUNICIPAL HYDRO-ELECTRIC POWER, LOS ANGELES

A review of the development of the Hydro-Electric Power System of Los Angeles, Calif., and of the operations of the Bureau of Power and Light, presented to give the taxpayers an accurate recital of the things that have been accomplished, as well as a clear conception of the future needs of the city in the way of development of its municipally-owned hydro-electric utility. 20 pp. Illustrated. (Apply to E. F. Scattergood, Chief Electrical Engineer, Bureau of Power and Light, 207 South Broadway, Los Angeles, Calif.).

ST. LOUIS MUNICIPAL BRIDGE

''The Municipal Bridge of St. Louis—A Record of Municipal Effort.'' By William E. Rolfe, Associate to the President of the Board of Public Service, St. Louis, and Lucius H. Cannon, Librarian, Municipal Reference Library. Published by the St. Louis Public Library, August, 1922. Price, 15 cents. 34 pp. Illustrated. (Apply to publishers.)

Around the World on Native-Lake Asphalt

Adlerflycht-Strasse, Frankfurt, Germany, paved with native-lake asphalt.

TWENTY-FIVE YEARS and more of service—under the most severe conditions of climate and traffic—is common record for Trinidad and Bermudez Native-Lake asphalt streets in all parts of the world.

Sun-baked, wind-swept and storm-beaten for ages in the tropics, these nature-made asphalts have been seasoned and toughened for long-lasting, low-cost service on modern streets and roads.

Millions of square yards of native-lake asphalt roads and pavements, in fact, have resisted traffic and disintegration by the weather for OVER THIRTY YEARS, at a maintenance cost of less than a cent per yard per year. Think of it! No other bituminous material has ever approached this record.

That's why a native-lake asphalt street or road is a sound, conservative investment of public funds—not a speculation.

Write at once for booklets describing these remarkable world-old native-lake asphalts.

The Genasco Line includes asphaltic roofing, flooring, paints and allied protective products. Write for descriptive matter.

New York
Chicago
Pittsburgh

THE BARBER ASPHALT COMPANY
PHILADELPHIA

St. Louis
Kansas City
Atlanta
San Francisco

TRINIDAD LAKE ASPHALT

Methods, Materials and Appliances

News for City and County Engineers, City Managers, Water-Works Superintendents, City Controllers, Park Superintendents, Purchasing Agents, and Others Interested in the Economical Construction and Efficient Operation of Public Improvement Undertakings

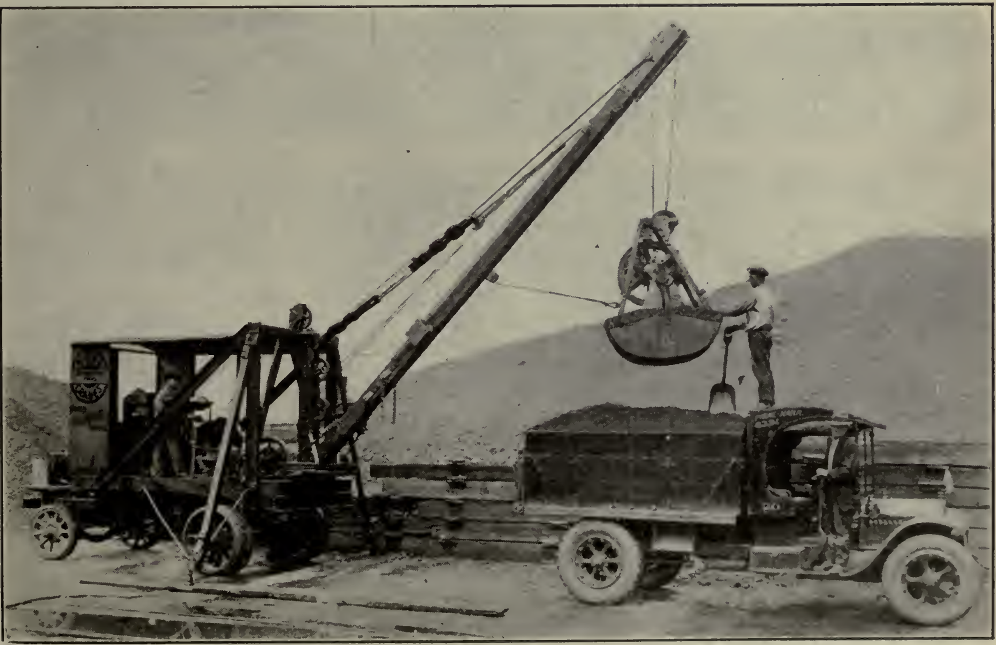
A Service Crane for Snow Removal

There has been an increasing call from cities for cranes that can be put to various services and which can propel themselves readily. This call has led the Byers Machine Company, Ravenna, Ohio, to bring out a crane that can be permanently mounted on a motor truck. The new outfit, called the "Byers Truckrane," can be driven from the garage to the job every morning as an automobile, or driven from one job to another, with a minimum of time loss in travel. The crane unmounted weighs only 6 tons and is similar to the Byers Auto Crane Model No. 1 in every respect except that it has no wheel, jack-shaft or differential and drive chain. It has a power drop for raising and lowering the steel bolts. The crane is furnished with a Hercules 4-cylinder, 4 x 5-inch gasoline engine, developing over 30 horsepower. Any half-cubic-yard bucket weighing not over 2,000 pounds can be used with it, or a special clam-shell of 1-cubic-yard capacity for snow removal. It is not necessary to use a new truck for the mounting. One that has seen 90 per cent of its usefulness having an engine capable of turning over is all that is needed.

The capacity and speed of this outfit, as well as its easy mobility from one section to another, make the use of such a crane in city snow removal particularly important.

Fuller Retires from Hazen, Whipple & Fuller

On September 1, Weston E. Fuller, a member of the firm of Hazen, Whipple & Fuller, consulting civil engineers, 30 East 42nd Street, New York City, withdrew from the firm to accept a position as Professor of Civil Engineering at Swarthmore College. Mr. Fuller will also do outside work as he has time. The firm name will again be Hazen & Whipple, the other partners remaining and the business being conducted under that name, as before. E. W. Doebler will be associated with Mr. Fuller.



A CITY SERVICE CRANE ADAPTABLE TO ALL-YEAR WORK

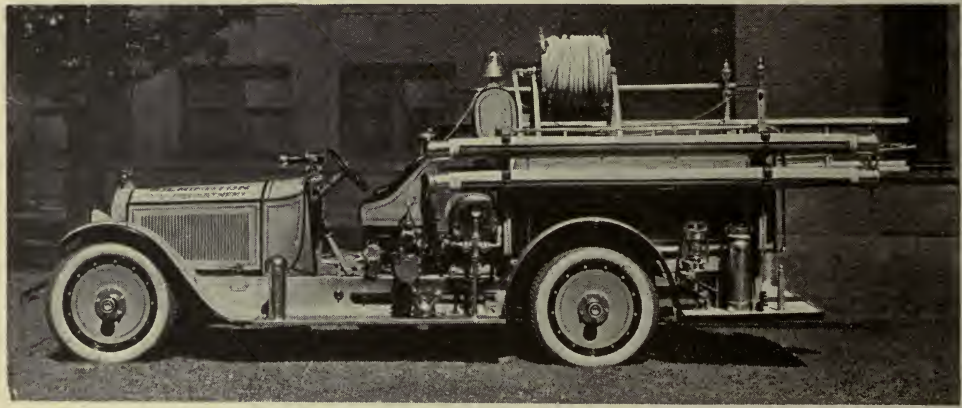
1583 ALARMS

Answered With No Trouble

John C. Mack, Chief of Fire Department, Lima, Ohio, says, "During January, 1916 the city of Lima placed in service a Northern equipped combination. Since this time the car has responded to 1583 alarms without the slightest imperfection developing in either machine or equipment and in no instance has this car ever failed to reach its destination."

Lima is now using eight Northern equipped commercial trucks under the able direction of Chief Mack.

He says further, "I would personally recommend them to any city wanting the best to be had in fire fighting equipment."



A Packard—Northern 750 gallon triple is shown above.
We can furnish other guaranteed pumpers from 150 gallons up.

You Can Buy Fire Apparatus Like This from Your Local Dealer

No need for you to go outside your own community to buy. Your own local business men in whom you have absolute confidence can sell you a complete motor driven fire truck that will give the kind of service Chief Mack tells about.

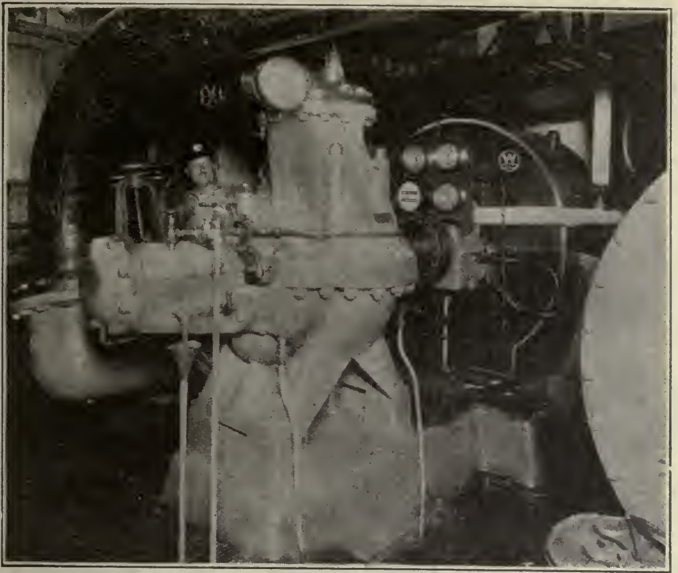
Over three hundred and fifty cities are satisfied users of Northern equipped Commercial Trucks.

NORTHERN
ROTARY
PUMPS
"MORE GALLONS PER HORSE POWER"

Buy from your local business men.

Northern Equipments and Pumps can be installed on any chassis.

NORTHERN FIRE APPARATUS CO.
MINNEAPOLIS, MINNESOTA . U.S.A.



PUMPING UNIT ON THE "THOMAS WILLETT," ONE OF THE NEW YORK CITY FIRE-BOATS

Protecting New York's Water-Front from Fire

Protecting the ships in the harbor of New York City and their thousands of passengers and millions of dollars' worth of cargo; co-operating with the land forces of the Fire Department to fight fires at the piers and buildings near the water-front; and being always ready for emergency calls that may require the most exacting tests of the personnel and apparatus, are the problems faced by the Marine Division of the New York Fire Department. This division has a fleet of 11 fire-boats, the most powerful of their kind in the world. The "Thomas Willett" and "James Duane" at separate times within the past few months have had their pumping equipment changed over to a two-unit installation of Lea-Courtenay horizontal-shaft, single-stage, centrifugal pump of special high-pressure design, directly connected by a flexible coupling to Westinghouse horizontal turbines of 600-horse-power rating.

The specifications of the new apparatus called for a capacity over the old system and also called for guarantees to cover the discharge of 3,600 gallons of salt water per minute at a pressure of 175 pounds per square inch, and 4,500 gallons at 150 pounds pressure when operating at a speed of 2,000 r.p.m. When the two units operate in series, they develop 300 pounds pressure at the pumps and discharge 4,500 gallons of salt water per minute, and when in parallel, 9,000 gallons per minute at 150 pounds pressure. The two steam turbines are supplied with a total of 25,000 pounds of saturated steam per hour at a 200-pound pressure, exhausting into a condenser with a vacuum of 26 inches, under which conditions the turbines do not exceed 550 horse-power, leaving a 10 per cent additional rating for an overload.

Women City Officials Approve Road Grader

At one of the recent demonstrations of the Road Razer, made by the Avery Company, Peoria, Ill., the Mayor and four councilwomen witnessed the work of this machine and wrote the following letter:

THAYER, KANS., August 9, 1922.

Avery Company,
Peoria, Ill.

GENTLEMEN:

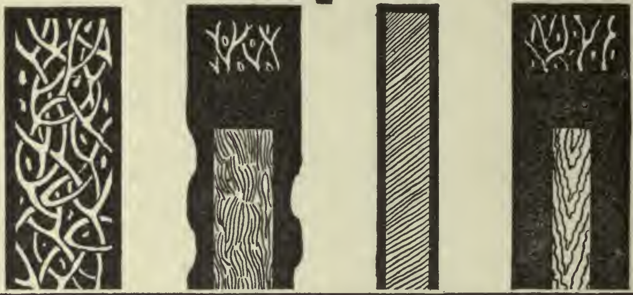
It has been a pleasure and an education along the line of road building to this day witness a demonstration of the work of your Avery Road-Razer on the streets of our city. The work was perfection, leaving our streets like a boulevard.

We are greatly pleased with the machine and most heartily recommend it for all dirt streets and roads.

Very truly yours,
ABBY H. FOREST, Mayor,
MRS. EUNICE ROSH, MRS. DAISY SAVAGE,
ALLIE LAMBERTSON, IVY W. CROSS,
Councilwomen.

MAYOR AND COUNCILWOMEN OF THAYER, KANS.

Servicised Expansion Joints



MONITORS
OF THE ROAD

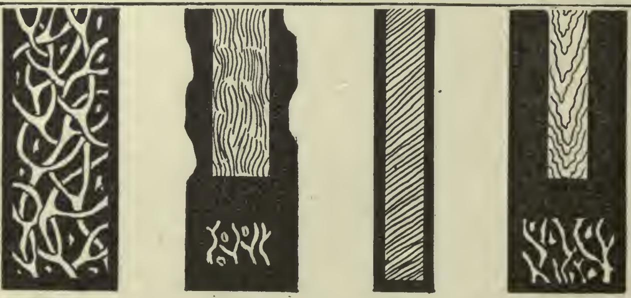
Old principles of expansion joint provide fillers of solid asphaltic content or impregnated fibre and asphalt in an elastic mass. ¶ The fundamental purpose of the filler is to re-occupy the space left by two contracting slabs. ¶ Solid asphaltic or impregnated fibrous materials contract, concrete slabs likewise contract on cooling. ¶ Three contracting bodies cannot occupy the same space as when expanded. Servicised Joints *expand* when the concrete slabs contract. ¶ This is the key to a permanent waterproof joint; a correct answer to the problem of expansion between two contracting bodies. Unimpregnated cellular fibrous matter in Servicised Joints brings about this re-expansion after compression is relieved.

Trapped Under Compression: The print to the right is an example of oozing under compression. Due to the hard asphalt surfacing over the concrete base, the traffic could not carry the surplus away because it was locked in between the asphalt surfacing and base. The force was great enough, however, to form bulges in the hard asphalt surface.

Write Us About Your
Expansion Joint
Problems

A Bituminous and Impregnated Fibre or Elastic Mass: No better proof of indiscriminate oozing. No better illustration of the need of expansion joint of the proper kind. The action in this instance resembles that of paste in a tube being squeezed with one side open. Action of this kind causes tremendous waste, without resulting in good. Servicised Joints will prevent this.

Servicised Products Co.
First National Bank Bldg.
CHICAGO



TYPE B	TYPE D	TYPE C	TYPE AA
75% Bitumen 25% Cellular Fibre	Self-Expanding Non-Raising	Felt Center—Coated Sides—Sidewalk Joint	3/16 Veneer Core

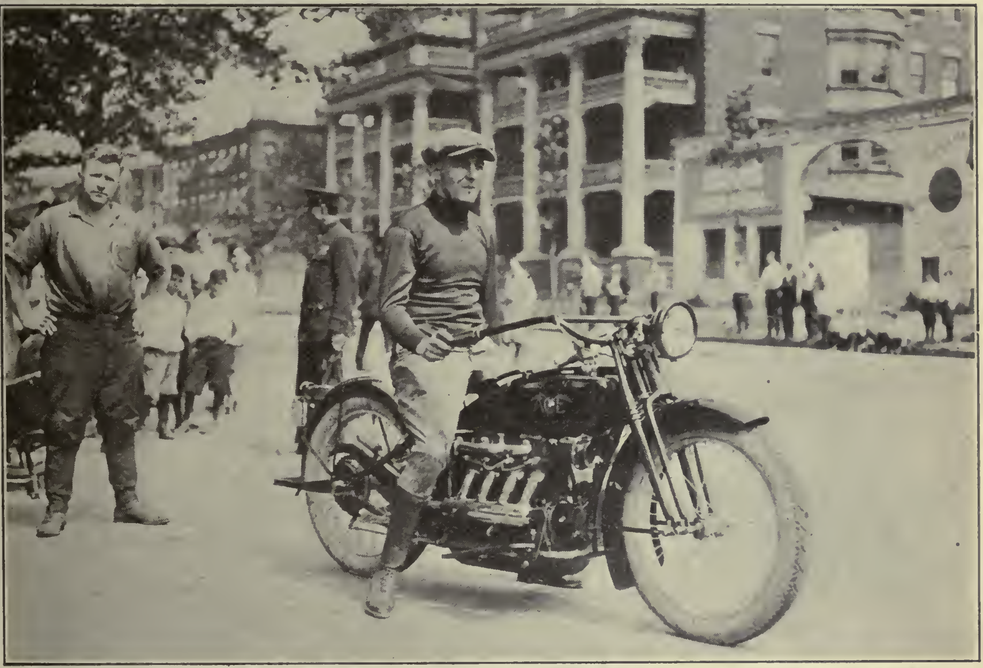
Four Types of Servicised Expansion Joints SERVICISED LOOK FOR TRADE MARK © 1920 *in Which the Oozing Tendency Is Controlled*

Servicise the Crevice and Save the Road

Ace Wins Time Trials in Philadelphia

Over a measured course of one mile of rough, wavy payment, an Ace motor-cycle, made by the Ace Motor Corporation, Philadelphia, Pa., won the two speed tests conducted by the Police Department as a requirement in submitting bids for supplying motor-cycles to the Philadelphia Police Department. The purpose of the contest was to demonstrate the capability of the machine for police service.

The riders were given a start of a quarter-mile to get up speed, and then were timed over a stretch of a half-mile, measured by the city surveyor, and had another quarter-mile to slow down in after crossing the finish line. The stretch covered a really rough pavement, including several wicked holes, which had to be dodged. Also, a street car track was crossed just before traversing the starting line. The side-car trial was run first. As each driver's turn was called, he drove his machine down to the end of the stretch and turned, getting up full speed well before he crossed the starting line. The same police officer traveled as a passenger in the side car of each machine as tested.



THE MOTOR-CYCLE THAT WON IN THE PHILADELPHIA POLICE DEPARTMENT TESTS

The Ace motor-cycle covered the half-mile with a side-car in just 31 seconds. The speed trial, using the machine only, gave 22 2/5 seconds for the same machine. In addition, a slow-speed test was made, driving the machine on high gear with the clutch fully engaged, under the observation of an automobile load of police officials, who drove alongside the motorcyclist and watched the operation of the machine. In this test the Ace also showed to advantage, taking 4 minutes and 11 4/5 seconds to travel the measured half-mile course.

The test was conducted by the following city officials: Director of Public Safety J. T. Cortelyou, Director of Welfare Warburton, Purchasing Agent T. S. Armstrong, Assistant Purchasing Agent H. S. McFadden, and Captain Harry Schultz of the Traffic Squad.

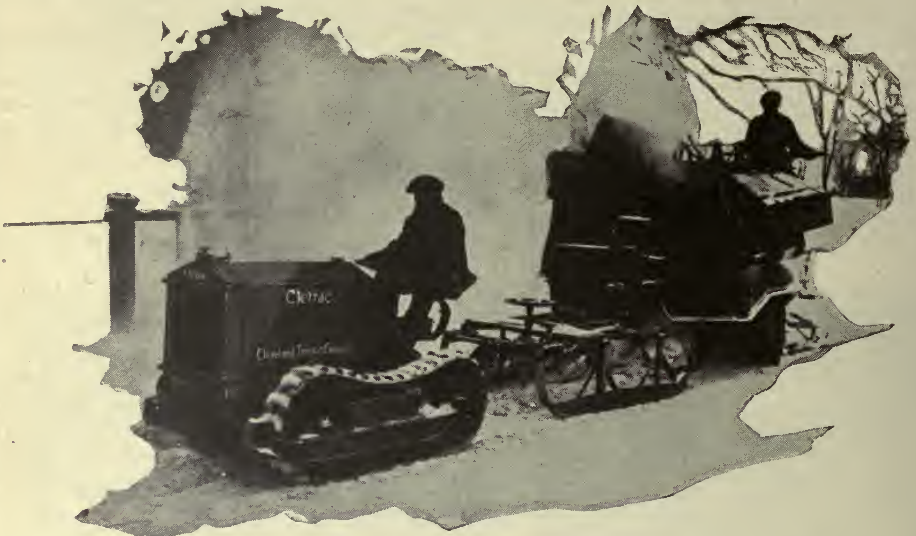
Hill & Ferguson Dissolve

A notice has been received announcing the withdrawal of S. F. Ferguson from the firm of Hill & Ferguson, 112 East 19th street, New York City. The practice of the firm is to be carried on by Nicholas S. Hill, Jr., at the same address.

Mr. Ferguson has announced that he will take a long vacation before again entering active business or professional work. Since September 1, his office address has been 10 East 44th street, New York City.

A New Asphalt Filler

The Solvay asphalt filler, which has recently been brought out by the Solvay Process Company, Syracuse, N. Y., is composed of raw crushed limestone, ground to a degree of fineness, such that from 70 to 75 per cent or more will pass through a 200-mesh screen. The fineness depends upon the specifications which it must meet. This asphalt filler is used principally for dusting asphalt and other bituminous pavements immediately after the surface is



A Money Saver For Every City In The Snow Belt

WHEN the big snows come Model "W" Industrial Cletrac hooks onto road machine or plow and starts digging, and it keeps "on the go" till every road is open.

Mr. John Webster, Street Commissioner of Bangor, Maine, writing of the performance of a Model "W" Industrial Cletrac during a period of severe storms, says:—"Yesterday we broke out three miles of cross streets and back roads, over which there has been no travel, snow ranging from three to five feet deep. I would conservatively estimate that the Cletrac will do the work of six or eight horses."

The experience of Bangor is typical of many municipalities throughout the snow belt. And, of course, all these cities find plenty or off-season work for their snow-fighters—such as road scraping, ditching, park maintenance, excavating and paving.

If your city faces an unusual snow-removal problem, investigate the record of Model "W" Industrial Cletrac. Interesting examples and convincing figures will be furnished gladly on request.

Cletrac
REG U S PAT OFF

HARD THIS WAY, BUT—

EASY ON A TRACK THE CLETRAC WAY

THE CLEVELAND TRACTOR CO.

Largest Producers of Crawler Tractors in the World

19205 Euclid Ave. Cleveland, Ohio

rolled. Inasmuch as asphalt fillers are relatively cheap and freight rates high, the sale of the Solvay filler is limited to central New York and northern Pennsylvania.

Ornamental Iron Street Lighting Standards

It is rapidly becoming the standard in street lighting practice to do away with unsightly wooden poles and overhead wires that mutilate shade trees and mar the beauty of city streets. Boulevard lighting brings safety from accident and crime, and also increases the attractiveness and beauty of streets. The iron lighting standards made by the Drake Manufacturing Company, Inc., Friendship, N. Y., are being installed by a large number of progressive cities and villages. These standards are made of cast iron with sides ½-inch in thickness. They are guaranteed to withstand frost, rust, and the shock of impact. One of the popular styles and sizes is illustrated herewith. The hexagonal standard is made in heights of 9 feet 5 inches, and 11 feet, with 18-inch base, and the fluted standard is made in the same sizes but weighs slightly more per standard.

The lighting standard shown is equipped with General Electric diffusing glass globe and canopy. All standards are arranged for General Electric Form 8 Novalux units, but the Form 9 unit can be used if desired, with an adaptor. All the standards have a door at the base to allow bolts to be fastened and underground cables to be connected with the wire which leads inside of the pole up to the lighting unit and socket. The socket forms an automatic cut-off and receiver for the incandescent bulb and globe.

A Pressure Road Oiler Mounted on a Trailer

A pressure road oiler which has certain advantages over horse-drawn and motor truck pressure oilers has been developed by the Austin-Western Road Machinery Company, 400 North Michigan Boulevard, Chicago, Ill. This trailer oiler can be pulled by either a truck or a tractor and consequently does not tie up so large an investment in a single machine as the oiler unit mounted on a motor truck. It retains the high-speed feature of the truck type, which is very desirable when the work of oiling is being done some distance from the source of oil supply. There is a certain speed beyond which oil cannot be applied successfully, but on the run to and from the base of supply the trailer saves much valuable time.

Trailer oilers are arranged for rear control, the only outstanding difference between those mounted on motor trucks and the trailer units being that the pump on the trailer oiler is driven from the rear wheels, as in the case of horse-drawn machines. The trailer oiler is furnished in two sizes, with tank capacities of 750 and 1,000 gallons. The oiling unit is substantially constructed, having a tank riveted in the same manner as locomotive boilers and fitted with baffle plates. The truck trailer is of the heavy-duty type that is always used where working conditions are unusually severe. It has a strong and heavy frame, roller bearing wheels and special springs. These outfits are so arranged that the complete oiler units can be removed from the trailer chassis without difficulty at the end of the oiling season and the latter used for other purposes if desired.

Plans for School Grounds

E. S. Draper, landscape architect and city planner, 11 East 5th Street, Charlotte, N. C., has been retained by the Fletcher Memorial School, McColl, S. C., to develop plans for the improvement and extension of the grounds, including the location of new buildings.

Filtration Plant Contractor

F. B. Leopold, one of the best-known men in the filtration industry, has recently opened an office in the House Building, Pittsburgh, Pa., and will conduct a business as contractor and builder of municipal filtration plants, gravity filters, pressure filters and water softening plants.

Century Brass Works, Inc.

Effective the middle of October, the Twentieth Century Brass Works, Belleville, Ill., changed its corporate name to the Century Brass Works, Inc. This makes no change in the personnel of the ownership or officers, or in the business policies of the corporation.

HANDLING ROAD OIL BY TRAILER

Eighty-six Cement Manufacturers Unite to Serve You

The Portland Cement Association means this: that valuable scientific, advisory and educational work which no one cement manufacturer could reasonably undertake alone is at your disposal. This means that you can be absolutely sure of yourself in using Concrete.

You can be sure in the first place of the cement you buy. Any manufacturer of Portland cement may join the Association, and no manufacturer has to belong to it. But Association By-Laws require that members' products shall measure up to the high standard of specifications of the United States Government and the American Society for Testing Materials. Cement bought from a member of the Association is therefore dependable.

You can be equally sure of the way to use it. If you want information about its usefulness under certain conditions, or about how to mix it or place it to get the best results most economically, you can get it from any one of our 24 offices, one of which is near you.

Supplying dependable information without charge, by booklet, or by personal correspondence or by conference when necessary, is the work of the Association. To supply it authoritatively, the Association maintains a large research laboratory and a staff of more than two hundred engineers.

The Association is, in effect, the joint research and educational foundation of 86 manufacturers of cement in the United States, Canada, Mexico, Cuba and South America. You are invited to use it freely.

Suggestions as to how our work may be made more useful to you are invited.

PORTLAND CEMENT ASSOCIATION

A National Organization
to Improve and Extend the Uses of Concrete

Atlanta
Boston
Chicago
Dallas
Denver
Des Moines
Detroit
Helena
Indianapolis
Kansas City
Los Angeles
Milwaukee
Minneapolis
New York
Parkersburg
Philadelphia
Pittsburgh
Portland, Oreg.
Salt Lake City
San Francisco
Seattle
St. Louis
Vancouver, B.C.
Washington, D.C.

A FIRE STREAM FROM A TRACTOR, AND THE PUMP

Pump Attachments for Tractors

A unique and very practical accessory in the form of a rotary pump which can be attached to the standard 5-ton "Caterpillar" tractor has been placed on the market by the Holt Manufacturing Co., Peoria, Ill. The pump is of special design, compact in size, and is attached to the rear of the tractor in the same position as the power pulley attachment. It is driven direct through the countershaft from the motor and is capable of delivering 220 gallons of water per minute under a working pressure of 100 pounds per square inch. At the normal speed of 1,000 r.p.m. it throws a 1⅛-inch stream 100 feet in the air and requires but 26 horse-power, which is only approximately two-thirds of the normal motor capacity of the 5-ton tractor.

This reserve capacity makes possible the use of a long hose, both for suction and discharge. When an ordinary length of hose is employed, a very broad area can be quickly drenched with a heavy stream. One special field of usefulness is in patrol work in forests and other timber districts, as well as for emergency fire protection in lumber camps. The tractor has the power and capacity to travel over all sorts of ground, and is able to penetrate to points inaccessible for other machines and vehicles. Where a stream or other water is available, the tractor with pump attachment can render vitally important service in forestry work.

This outfit is also available as an auxiliary for fire department service and for pumping out cellars which have been flooded; as an auxiliary for irrigation work and for use by contractors in pumping out excavations, trenches and cofferdams. The pump is of the rotary gear wheel type, with all working parts mounted in a heavy cast iron case, which preserves its alignment. The whole pump weighs only 225 pounds.

An Improved Street Can

Every progressive city is making some provision for keeping the streets clean and sanitary through the installation of serviceable street cans into which trash may be thrown. The Butler Manufacturing Company, St. Anthony Falls Station, Minneapolis, Minn., has recently placed on the market an improved street can which is both artistic and serviceable. It was originally modelled after the official Minneapolis can and has now been adopted by Minneapolis as its official can.

This can, illustrated herewith, can be shipped knocked down at third-class rates, packed three in a crate, each crate weighing approximately 300 pounds. The Butler can is 38 inches high above the 4-inch standard, is 18 inches deep, 26 inches wide, and made of 20-gage galvanized material. The can is painted both inside and out, the regular color being green, but, if desired, the cans can be shipped unpainted at a correspondingly lower price. A gunny sack is hung on the hooks inside to receive the trash as thrown in. It can be readily removed and an empty one substituted, thus making it unnecessary to tip up the can when emptying it. The gunny sacks are not furnished by the manufacturer, as they can usually be bought as cheap locally.

A STREET CAN IN WHICH WASTE PAPER "STAYS PUT"

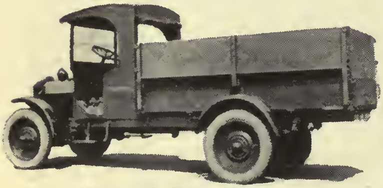
How Philadelphia Handled Last Winter's Snow

On January 29, 1922, Philadelphia experienced an 18-inch snowfall in which the street cleaning department had its first opportunity to thoroughly test its snow-fighting organization and equipment. Very careful plans had been made for the most effective use of each piece of equipment and personnel. Charts were made showing the assignment of work, dumping locations, etc., in the central districts of Philadelphia.

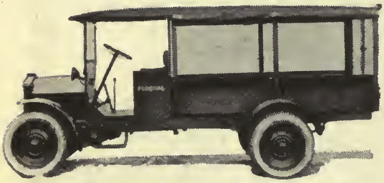
For the removal of snow in the down-town district, plows, operated like road graders with

a FEDERAL Fast Express

Federal Fast Express with Panel Express Body

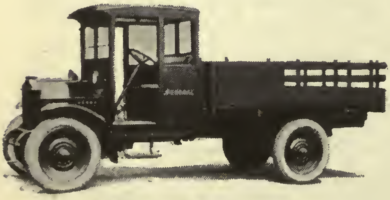


Federal Fast Express with Grain Body



Federal Fast Express with Screen Express Body

Federal Fast Express with Huckster Express Body



Federal Fast Express with Standard Stake Body

---with just the right body for any quick delivery need

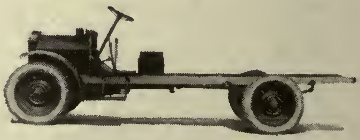
Because of the extraordinary demand for the reliability, endurance, economy and unusual speed of the FAST EXPRESS, Federal now equips this sturdy chassis with 32 body combinations.

Many of these bodies are readily interchangeable. There is a style that will best accommodate every haulage requirement of the light delivery field. Federal bodies are mounted and painted, ready for instant service when the truck is delivered.

Mounted on the new FAST EXPRESS chassis, whatever body you select will insure you of a truck without equal in the light delivery field. It is powerful, dependable, enduring, and genuinely economical—and capable of a speed of 35 miles per hour.

Before you buy a light-delivery truck, see the Federal FAST EXPRESS.

FEDERAL MOTOR TRUCK COMPANY
Detroit, U. S. A.



Chassis of Fast Express

Another FEDERAL

VIEW OF LOADER AT WORK AND CLOSE-UP OF RECEIVING END

the motive power furnished by trucks and tractors and trolley cars, were used to open up the streets. Snow was then removed by motor trucks loaded either by hand or by means of a loader made by the Barber-Greene Company, Aurora, Ill. One of the accompanying illustrations shows a Barber-Greene loader which attracted considerable attention. This was the first machine of this type to be used in Philadelphia for snow removal. It loaded a 5-ton truck in a minute and a half and averaged 25 trucks per hour. By hand it took 12 men 20 minutes to load the same truck.

The other illustration shows the manner in which the snow is scooped up and fed to the belt conveyor, which elevates it and finally dumps the snow into the truck. The machine is run by gasoline and operated by one man. One to three laborers are used to clean up and work with the machine.

New Pumper at Long Beach, Calif.

The city of Long Beach, Calif., recently purchased an Ahrens-Fox pumping engine, which was exhibited by the Ahrens-Fox Fire Engine Company of Cincinnati, Ohio, at the recent San Francisco Fire Chiefs' Convention. On the acceptance test the engine worked very successfully. The engine, a Model K-4, was immediately placed in service. It has a capacity of 750 gallons per minute and is operated by a 4-cylinder motor, booster equipped. The pumper was sold by John P. Ahrens, Vice-President of the Ahrens-Fox Fire Engine Company.

Gas Street Lighting

We are advised that the following places installed additional Welsbach gas street lamps during the month of September: Kenmore, N. Y.; Worcester, Mass.; Yonkers, N. Y.; Palmyra, N. J.; Springfield, Ohio; Washington, D. C.; South Orange, N. J.; Glen Ridge, N. J.; St. Louis, Mo.; Camden, N. J.; Boston, Mass.; Baltimore, Md.; and Memphis, Tenn.

Engineer for Electric Plants at Muscatine and St. Charles

Arthur L. Mullergren, consulting engineer, Kansas City, Mo., has been retained by the city of Muscatine, Iowa, to prepare plans and specifications and supervise the construction of the municipal electric light plant and distribution system and the electrification of the water pumping-station, for which bonds of $350,000 have been voted. Mr. Mullergren is also preparing a report, estimates, plans and specifications for a complete new water pumping-station for St. Charles, Mo.

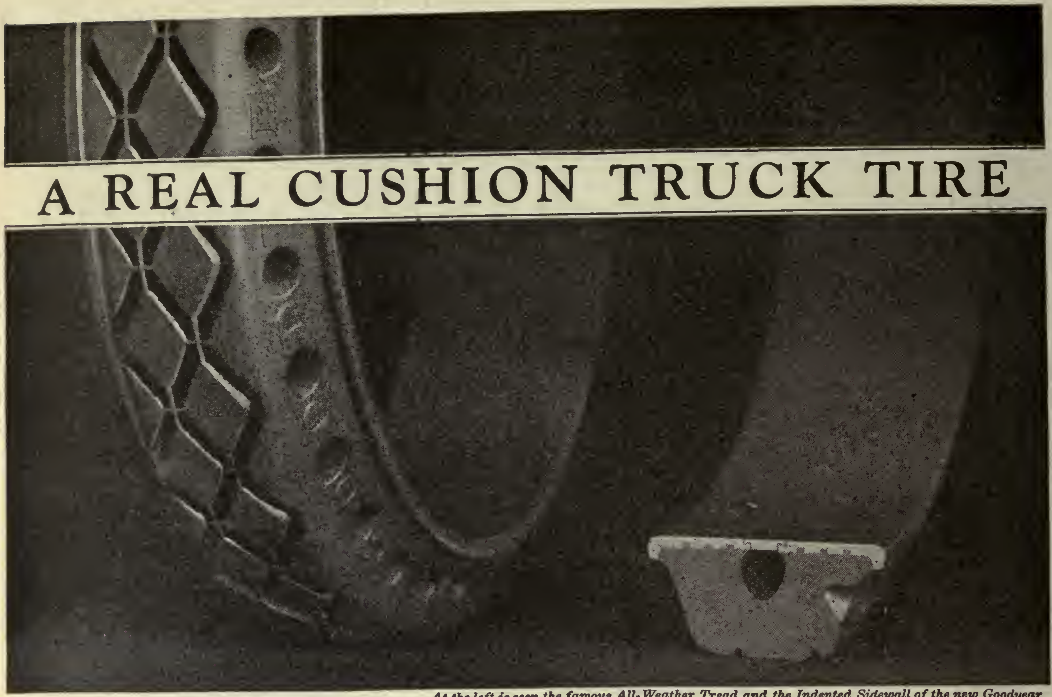
Source of Street Lighting Material

The article, "Minneapolis Investigates Street Lighting Conditions," which appeared on pages 338-340 of the October, 1922, issue of THE AMERICAN CITY MAGAZINE, was abstracted from a report of the Public Lighting Committee of the Minneapolis City Council, of which W. C. Buck, Alderman, was Chairman.

Offices of THE AMERICAN CITY MAGAZINE to Be Located at Fourth Avenue and 30th Street

Readers and advertisers who have assisted in the steady growth of THE AMERICAN CITY MAGAZINE from year to year will be interested to learn of the removal of our New York office from the Tribune Building, 154 Nassau Street, to larger quarters in the Fourth Avenue and 30th Street Building, 443 Fourth Avenue, New York City. This will bring our offices closer to the large railroad terminals and hotel district, and we trust will make it possible for still more of our out-of-town friends to visit us when in New York. In our new location we shall occupy the entire tenth floor, thus enabling us to arrange our Editorial, Advertising, Circulation and Service Departments to better advantage. This change of address will be effective December 1, 1922.

A REAL CUSHION TRUCK TIRE



At the left is seen the famous All-Weather Tread and the Indented Sidewall of the new Goodyear Cushion Truck Tire. Right — a cross-section showing the Goodyear Patented Hollow-Center

Goodyear has produced a real cushion truck tire embodying both the original Goodyear Hollow-Center Cushion and the famous All-Weather Tread.

It unites in one tire the resilience of the cushion, the wearing quality of the solid, and the tractive power of the All-Weather Tread.

It is a development of the standard Goodyear Hollow-Center Cushion Tire, more than 30,000 of which have been proved in actual service during the last five years, and it is a distinct advance on that splendid tire.

The Goodyear All-Weather Tread Cushion Tire has a pressed-on base that defies base-separation troubles.

Its tread is the powerfully tractive All-Weather Tread design, insuring sustained headway under all road and weather conditions, saving fuel and engine strain by its sure gripping.

Its triple cushion design makes it a real shock absorber, resilient beyond any other tire excepting the pneumatic. It has the advantage of the patented hollow-center, the high, thick blocks of the All-Weather Tread, and a new sidewall pattern that permits easy compression under pressure.

The Goodyear All-Weather Tread Cushion Tire is made in all standard sizes, up to and including 7 inches, and is specified for all-'round equipment on light and medium duty vehicles and as front wheel equipment with Goodyear All-Weather Tread Solids on the rear, for heavier trucks.

For further information, write the Government Sales Department at Goodyear, Akron, Ohio, or Los Angeles, California.

In placing orders for new apparatus, you should definitely specify this Cushion, unless your needs are for Goodyear All-Weather Tread Solids or Goodyear Cord Truck Tires

GOODYEAR

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Volume XXVII Number 6

The American City Magazine

New York December 1922

The World's Largest Municipal Budget

ON October 31, 1922, the Board of Estimate and Apportionment of the City of New York adopted what is unquestionably the largest municipal budget in the history of the world. From the detailed figures published in the *City Record* for November 14, the accompanying table has been compiled, showing the amount appropriated to run each of the municipal departments of New York City for the year 1923. The odd cents have been omitted.

The column headed "Salaries" covers all items designated in the budget under the heading of personal services, including salaries, wages, fees, and other similar expenditures. "Other Expenses" includes equipment, supplies, repairs, maintenance of buildings, postage, telephone charges, printing, rent, interest charges, and all other items except personal services.

NEW YORK CITY BUDGET FOR 1923

Departments	Salaries	Other Expenses	Departmental Total
Board of Aldermen and City Clerk	$415,032	$8,180	$423,212
Board of Estimate and Apportionment	437,461	52,000	489,461
New York City Employees' Retirement System	80,048	2,989,393	3,069,441
Commissioners of the Sinking Fund	3,960	110	4,070
The Mayoralty	88,705	4,900	93,605
Department of Finance	1,870,298	95,860	1,966,158
City Chamberlain	79,331	1,955	81,286
Law Department	1,470,011	79,280	1,549,291
Department of Taxes and Assessments	784,120	10,350	794,470
Board of Elections	952,450	922.445	1,874,895
Municipal Civil Service Commission	233,479	9,905	243,384
Commissioner of Accounts	303,044	5,152	308,196
Bureau of Weights and Measures	75,112	1,600	76,712
Department of Licenses	206,441	17,381	223,822
Department of Public Markets	319,124	17,065	336,189
Board of Assessors	40,426	695	41,121
Art Commission	6,410	790	7,200
Examining Board of Plumbers	7,032	1,718	8,750
President, Borough of Manhattan	4,400,952	862,342	5,263,294
President, Borough of the Bronx	2,038,204	456,773	2,494,977
President, Borough of Brooklyn	3,765,409	1,042,290	4,807,700
President, Borough of Queens	3,654,259	1,408,046	5,062,305
President, Borough of Richmond	1,272,635	279,270	1,551,906
Department of Education	....	....	75,805,355
Board of Education Retirement System	....	....	501,991
College of the City of New York	1,000,000	190,000	1,190,000
Hunter College of the City of New York	775,000	81,391	856,391
Teachers' Retirement System	69,990	3,439,670	3,509,660
Hunter College Retirement System	....	....	23,035
New York Public Library	....	....	1,029,094
Brooklyn Public Library	....	....	654,759
Queens Borough Public Library	....	....	234,230

NEW YORK CITY BUDGET FOR 1923—Continued

Departments	Salaries	Other Expenses	Departmental Total
Department of Parks, Park Board	$40,000	$49,401	$89,401
Department of Parks, Manhattan	1,263,484	177,975	1,441,459
Grant's Tomb			7,000
New York Public Library Building			54,000
Metropolitan Museum of Art	514,531	228,390	742,922
New York Aquarium	46,626	12,600	59,226
American Museum of Natural History	392,434	52,915	445,349
Department of Parks, The Bronx	662,005	83,230	745,235
New York Botanical Garden	155,636	34,173	189,809
New York Zoological Garden	197,825	66,690	264,515
Department of Parks, Brooklyn	1,032,499	155,436	1,190,935
Brooklyn Institute of Arts and Sciences, Central Museum	105,046	24,715	129,761
Brooklyn Institute of Arts and Sciences, Children's Museum	16,090	3,825	19,915
Brooklyn Botanic Garden and Arboretum	70,761	8,804	79,565
Department of Parks, Queens	329,910	42,827	372,737
Department of Parks, Richmond	45,268	6,257	51,526
Bronx Parkway Commission			184,000
Staten Island Institute of Arts and Sciences	7,356	750	8,106
Police Department	28,003,401	4,038,821	32,042,223
Fire Department	16,340,871	1,363,054	17,703,925
Armory Board	28,352	337,956	366,308
Board of Standards and Appeals	51,777	2,065	53,842
United States Volunteer Life Savings Corps	5,360	2,425	7,785
Department of Health	4,257,864	1,220,777	5,478,641
Department of Public Welfare	4,373,779	3,536,308	7,910,087
Board of Child Welfare	129,959	4,600,600	4,136,559
Bellevue and Allied Hospitals	1,572,356	1,276,550	2,848,906
Board of Ambulance Service	7,554	151,530	159,084
Tenement House Department	792,899	25,499	818,398
Department of Water Supply, Gas and Electricity	5 040,740	7,054,775	12,099,515
Department of Street Cleaning	11,921,310	4,805,505	16,726,815
Payments to Charitable Institutions			7,391,175
Committee of Insane Persons			6,500
Department of Correction	1,324,421	954,462	2,278,883
Parole Commission	108,105	3,623	111,728
Department of Plant and Structures (Including Municipal Garage)	4,981,731	1,775.906	6,757,637
Department of Docks	1,113,142	319,085	1,432,227
City Court of the City of New York	322,764	2,425	325,189
Court of Special Sessions, Adult Court	319,152	6,151	325,303
Children's Court, City of New York	334,456	8,775	343,231
City Magistrates' Court	1,414,753	51,310	1,466,063
Municipal Court, City of New York	1,233,667	25,070	1,258,737
Office of Chief Medical Examiner	120,279	5,900	126,179
Board of City Record, City of New York	86,276	1,257,835	1,344,111
Board of Purchase	205,363	12,000	217,363
Advertising			115,000
Debt Service			84,935,642
Tax Deficiency			5,540,000
Rent, New York City			783.953
Miscellaneous, New York City			722,235
Total Appropriations for New York City Government			$336,484,665
Less Revenue from Corporate Stock, Special and Trust Funds, Water Revenues, etc			6,312,148
Net Total City Budget			$330,172,517
Total County Budgets for Counties within the City			10,582,835
New York County		$5,403,032	
Bronx County		1,238,977	
Kings County		2,787,873	
Queens County		884,707	
Richmond County		268,246	
New York's Share of State Tax			12,595,624
Total Budget for 1923			$353,350,976

It will be observed that the budget includes $84,935,642 for Debt Service. This total covers the following items: interest on city's bonded debt, $49,965,471; amortization and redemption of corporate stock and serial bonds, $16,383,126; interest on and redemption of temporary debt, $18,587,045.

The cost of running the city of New York is mounting steadily towards a million dollars a day. Since 1917, the last year of the Mitchel administration, the total annual budget has grown as follows:

1917	$211,114,136.82
1918	238,123,759.20
1919	248,025,434.88
1920	273,689,485.13
1921	345,530,039.17
1922	350,601,570.07
1923	353,350,975.67

The increase in the budget for 1923 over that of 1922 is even higher than would appear from the foregoing table, since state taxes for 1923 will be $1,834,889.57 below 1922, and the City Debt Service appropriation for 1923 is $17,302,149.52 below 1922.

Chicago's Snow Activities

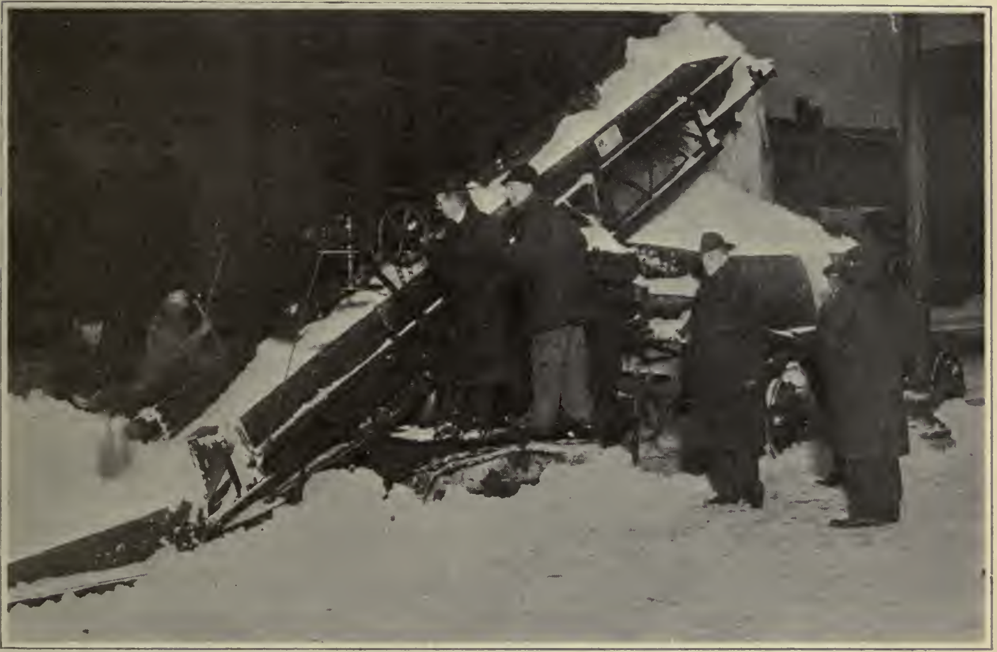
Area, Organization, Methods and Equipment

By William J. Galligan

Assistant Superintendent of Streets, Chicago, Ill.

IN history, a momentous event frequently gives the title by which the year of its occurrence is afterward known, as "The Year of the Great Wind," or "Tidal Wave," or "Earthquake," or "Great Fire." In Chicago, 1918 might properly be called "The Year of the Great Snow," for in depth of fall and point of severity the winter of that year broke all records since the establishment of the Weather Bureau. The total snowfall during December, January and February, 1917-1918, was 63 inches. On Sunday morning, January 6, 1918, following a rain of 1.44 inches, and without warning from the Weather Bureau, it began to snow heavily. Accompanied by a high wind and a rapidly falling thermometer, it quickly became a blizzard. By afternoon, automobiles were stalled and abandoned, and steam and surface car line service was largely suspended. The storm continued unabated during the night, bringing 14.4 inches of new snow on top of previous falls.

Chicago awoke Monday morning to find herself unable to get beyond her doorway. With the exception of disorganized elevated and limited street car service, traffic was cut off, and business was at a standstill. The citizens took it good-naturedly, and with remarkable energy and cooperation dug their way out. This storm was soon followed by a second, bringing 9.9 inches of snow, the thermometer ranging from 6 degrees to 14 degrees below zero. Because of the bitter cold, greatly intensified by a driving gale, practically all outside activities were suspended.



AN EFFECTIVE TYPE OF SNOW-HANDLING MACHINE USED IN CHICAGO, ILL.

Since that year the snowfalls have been small; during the past two years that of each winter was less than twelve inches. Yet the experiences of 1918 brought a vivid realization of the need of careful plans, experienced organization and modern equipment to cope with possible conditions.

Area of Snow Removal

The territory covered in snow removal comprises the congested down-town business district, or "loop"; the vicinity of the large wholesale houses and railway terminals; and the main arteries and car line streets leading to the "loop." It also embraces the principal streets of practically all the business centers of the fifty wards into which the city is divided, each of which in area and population is a city in itself. Along the car lines throughout the city where snow is not cleared from the roadways, it is removed to the extent of 50 feet where persons get on and off, and from the entire intersection at prominent transfer points. Attention is also given to the removal of snow from in front of churches, schools, and buildings generally where persons gather in large numbers. Newspapers are scanned for burial notices, so that snow may be removed from places where funerals will take place.

Organization and Methods

For purpose of organization, the ward is the work unit of the Bureau of Streets. Under the Superintendent and Assistant Superintendents of Streets, a ward superintendent is in charge of its various activities in each. The work of snow removal is performed by day labor.

Previous to the snow season, emergency cards are issued to all able-bodied laborers who may apply, permitting them to be employed without delay at the various ward yards in case of snowfall. Lists of ward superintendents and foremen, with telephone numbers, are furnished the chief operator of the police, to be called through the various stations in event of a night call being necessary to get out emergency snow forces for clearing the down-town district. In this way the organization is quickly assembled.

Prior to 1918, snow was removed by ward and emergency teams. The large amount of creosoted block in the "loop" made the handling of teams extremely difficult. Unskilled drivers and poorly shod horses caused frequent traffic tie-ups, which were difficult to untangle. Dumping facilities being limited, at the peak of snow removal these places were bedlams of yelling, cursing drivers. Because of these conditions, much time was lost and comparatively few loads made.

Equipment

To remove the "Great Snow," it was soon realized that customary methods would not do. Consequently, patent dump-trucks of ten-yard capacity were employed. These were organized in squads of ten, each being in charge of a ward superintendent, a ticket puncher and two subforeman. Five loaders were assigned to each truck. In this way, trucks were quickly loaded and kept moving; and by working day and night shifts, the principal streets in the down-town district were cleared in seventy-two hours. One truck was found to be equivalent to five teams. These entered the dump, discharged their loads and returned to their loading places without delay or confusion. For the prompt and economical removal of snow, motor trucks are far superior to teams, and they have been used in Chicago ever since.

How rapidly snow was handled may be judged from the record of a typical night at one of the river docks, from which 680 loads of snow were dumped into the river by 40 trucks in 480 minutes (8 hours), or an average of one load every 45 seconds. It may be of interest to note that the record of delivery at the dock was distributed as follows:

Hours between—	Loads
6 and 7 P. M.	118
7 and 8 P. M.	96
8 and 9 P. M.	76
9 and 10 P. M.	70
10 and 11 P. M.	97
11 and 12 P. M.	85
12 and 1 A. M.	75
1 and 2 A. M.	63
Total	680

It will be observed that the loads steadily decreased in number until ten o'clock, after which there was a sharp advance. The decrease was due to the ebbing vitality of the loaders. At ten o'clock coffee and sandwiches were served by a truck from a hastily organized commissariat, which explains the upward turn. Its value may be judged from the fact that on two occasions gangs that in some way had been missed by the coffee truck brought their tools to the yard at midnight, refusing to work longer, while other gangs remained cheerfully on the job for two hours longer.

Snow-Plow

The Bureau has twenty-five snow-plows of the Champion, Good Roads and Baker makes. These are attached to the front of five-ton trucks, and may be used with any type of make. To get the best results, the plows should be started before the snow has attained great depth, and should be kept operating during the continuance of the storm. In this way, the roadways will be kept clear for traffic, and the snow will be in windrows ready for removal soon after the cessation of the storm. The plows are operated in batteries of two. They travel at two speeds, going from four to six miles per hour. Schedules are followed, which cover the main arteries of the inner center of the city and streets leading to freight-houses and railroad yards, which ordinarily would not get snow service. The snow-plow squad is composed of experienced men and is ready for duty on short notice, day or night.

Snow-Loader

On December 28, 1920, Chicago made an initial test for the first snow-loader in the country. It was manufactured by the Barber-Greene Company, and was in every way satisfactory. It ran thirty-two hours continuously without a breakdown, operating under a varying thermometer of from 32 degrees above zero to 5 below. It handled everything from snow, almost slush, to icy mass, with equal efficiency. Its average loading was more than three cubic yards per minute, although the snow had not been plowed or piled.

It is estimated that one machine and four trucks performed the work formerly requiring twelve trucks and sixty laborers, effecting in an eight-hour shift a saving of over $450. In its operation, a loader requires the services of an engineer and a helper, and two laborers at the plow end. It is self-propelled, self-loading, and end-discharging. It has a plow on either side of the conveyor belt, gathers the snow from the pavement, and places it on the conveyor, which loads it onto a truck moving in the rear of the loader. Under favorable conditions it has a capacity of five yards per minute.

It is operated by a Buda gas engine, which consumes less than a gallon of gasoline per hour and about a quart of oil in an eight-hour shift. The cost of operating the snow-loader, exclusive of interest, depreciation, and repairs, is less than $30 per eight-hour shift. The cost of the loader is $4,900. The city now has four of these, and is about to purchase two more in season for service this winter.

Municipal Asphalt Plants

THE extent to which American cities and other municipalities are now doing their own street repair work with the aid of their own asphalt plants is indicated in reports to The Asphalt Association, New York City, which show that there are in the United States ninety-eight public asphalt plants. Municipal plants are to be found in the following cities: Little Rock, Ark.; Los Angeles, San Francisco, Calif.; Denver, Colo.; Wilmington, Del.; Atlanta, Ga.; Boise, Idaho; Chicago, Ill. (3); Indianapolis, Bluffton, Fort Wayne, Ind.; Topeka, Kans.; Munroe City, Ky.; Shreveport, New Orleans, La. (2); Springfield, Fall River, New Bedford, Northampton, Worcester, Mass.; Flint, Lansing, Detroit (3), Highland Park, Saginaw, Mich.; Minneapolis, St. Paul, Duluth, Minn.; Jackson, Miss.; Kansas City, St. Louis, Mo. (2); Omaha, Nebr.; Manchester, N. H.; Atlantic City, Newark, Bayonne, Trenton, N. J.; Brooklyn, Syracuse, New York City (4), Niagara Falls, Elmira, Schenectady, N. Y.; Toledo, Cleveland, Columbus, Dayton, Cincinnati, Youngstown, Ohio; Oklahoma City, Okla.; Portland, Ore.; Harrisburg, Johnstown, Erie, Pittsburgh (2), Reading, Scranton, Philadelphia, Pa.; Providence, Pawtucket, R. I.; Nashville, Memphis, Tenn.; Fort Worth, Tex.; Roanoke, Norfolk, Portsmouth, Va.; Seattle, Wash.; Milwaukee, Superior, Wis.

The city of Salt Lake City, Utah, has just completed the installation of a modern asphalt plant having a capacity of 750 square yards of 2-inch asphalt pavement per day. Newark, N. J., is selling $50,000 worth of bonds for a new city asphalt plant. Quitman, Ga., has also installed a plant.

Our City Thoroughfares--Shall They Be Highways or Garages?

A Consideration of the Parking Problem

By Herbert S. Swan

City Planner, New York

THE parking question has become, within the last few years, one of the most aggravated traffic problems. Cars must be parked, and parked convenient to the destination of the people using them; but where to park them, except in the streets, where they deprive other vehicles of the facility of using the streets, is a problem which no city has solved satisfactorily.

Whether a particular space in the roadway shall be occupied by a standing or by a moving vehicle, is not the question. Nor is it a question of whether a given vehicle shall be allowed to stand, or be forced to move. It is much broader than either of these alternatives, for, in the more acute cases, it squarely presents the issue, whether standing vehicles shall be permitted to drive moving vehicles entirely off the streets.

A vehicle has as much right to stop as it has to move, but its right to stand in the streets is not equal to its right to circulate. The purpose of a street is to serve as a highway, not as a storage yard. To permit vehicles to stand in narrow streets as long as their owners may choose, results, where there is a considerable amount of traffic, in barricading the streets and in diverting traffic to other streets where it can move more freely.

The studies made by the City Plan Commission of Paterson, N. J., on the subject of parking should be of particular interest to other cities.

The maximum parking of cars in the business district of Paterson is ordinarily between 12:00 and 1:00 P. M., when it sometimes is as high as 700 cars. Many cars are parked in the streets the entire day. This is of minor importance on secondary streets, but when cars park on Main Street for five and six hours the consequences are too serious to ignore.

TABLE I—PARKED CARS

Main Street Between Ellison and Van Houten Streets on a Typical Day, 8 A. M. to 6 P. M.

Time, Minutes	Machines Parked		Parked Time	
	Number	Per Cent	Minutes	Per Cent
1-5......	26	11.1	106	1.4
6-10.....	84	35.8	792	10.1
11-15.....	17	7.2	229	2.9
16-20.....	21	8.9	402	5.1
21-25.....	2	.8	42	.5
26-30.....	17	7.2	503	6.5
31-40.....	19	8.2	687	8.7
41-50.....	18	5.1	566	7.2
51-60.....	4	1.7	235	3.0
61-90.....	14	6.0	1,064	13.5
91-120....	9	3.8	972	12.4
121 plus...	10	4.2	2,247	28.7
Total....	235	100.0	7,845	100.0

Main Street is the retail street, and more dependent than any other down-town street for its business upon the volume of traffic. Anything that detracts from Main Street's accessibility to the buying public is a direct stab at its business prestige; anything that increases the number of people frequenting the street tends to enhance its opportunities for business.

Out of the 235 cars parked on the single block on Main Street between Ellison and Van Houten Streets during the ten hours from 8:00 A. M. to 6:00 P. M., a typical day, ten cars stood at the curb, for periods varying from over 2 hours, to 6 hours and 5 minutes. The total parked car hours for the 235 cars was 130 hours 45 minutes; that for the ten cars parked more than two hours, 33 hours 27 minutes. The average parked time for all cars was 33 minutes per car; for cars parked over two hours, though they constituted only 4.2 per cent of the total cars parked in the block, consumed 28.7 per cent of the total vehicle hours parked by all the cars.

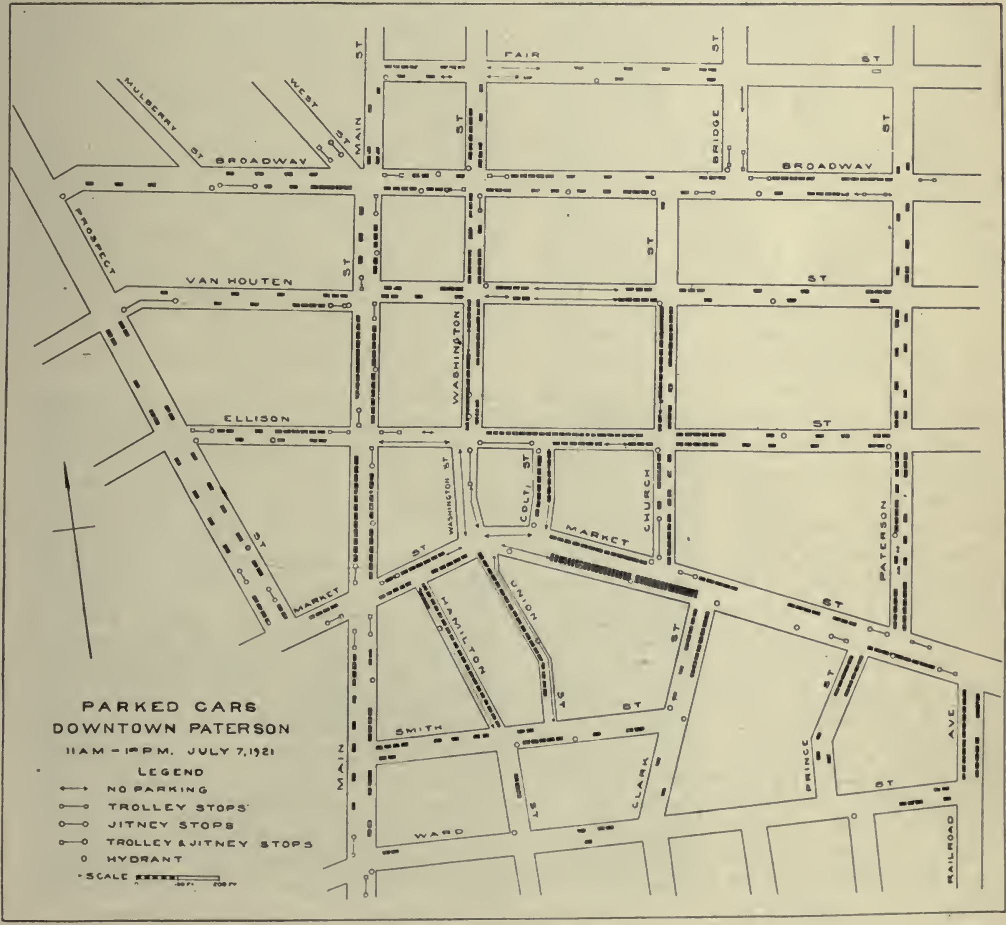
More than half of the machines parked were parked for less than 15 minutes. Seven-tenths were parked for less than half an hour. Only one machine in seven parked longer than one hour. Yet the machines parked more than an hour consumed 55 per cent of the total time parked by all the machines.

TABLE II—TYPICAL SAMPLES OF "PARKING HOGS"

Main Street Between Ellison and Van Houten Streets on a Typical Day, 8 A. M. to 6 P. M.

Time of Arrival	Time of Departure	Time Parked
9:15 A.M.	11:35 A.M.	2 hrs. 20 min.
9:40 A.M.	11:55 A.M.	2 hrs. 15 min.
10:30 A.M.	12:56 P.M.	2 hrs. 26 min.
11:36 A.M.	2:05 P.M.	2 hrs. 30 min.
11.45 A.M.	5:50 P.M.	6 hrs. 5 min.
12:25 P.M.	5:45 P.M.	5 hrs. 25 min.
12:30 P.M.	4:00 P.M.	3 hrs. 30 min.
1:35 P.M.	5:05 P.M.	3 hrs. 30 min.
2:15 P.M.	5:00 P.M.	2 hrs. 45 min.
3:15 P.M.	5:56 P.M.	2 hrs. 41 min.
Total parking time for above 10 cars.		33 hrs. 27 min.
Average parking time per car		3 hrs. 20 min.

At its busiest point, between Ellison and Van Houten Streets, Main Street passes an average of 2.25 vehicles per minute per traffic unit of roadway width during the maximum traffic hour. With a double-track trolley in the center, its roadway width, if free of all obstructions at the curb, readily passes one traffic unit on either side of the car tracks, but with vehicles parked at the side, all traffic is forced onto the tracks. Every machine parked for an hour elbows 135 vehicles out of their alignment, but the annoyance suffered by traffic exceeds the embarrassment to the machines hourly thrown upon the trolley tracks by parked cars. One-half of the roadway width, and that the most effective half so far as ordinary vehicular traffic is concerned, is completely paralyzed, so that traffic requiring two roadway units for its free movement is forced into one. There it must fall into an agonizing goose-step behind trolleys which, through a series of jerks and starts, sometimes only manage to cover two or three miles an hour. The combined result of these different factors is that the traffic along Main Street often backs up, and fills



the street, not only to the first but even the second and third cross-streets to the rear.

Viewed solely from the interests of moving traffic, all parking should be prohibited on Main Street. Such a rule would, however, at the present time, appear to be needlessly drastic. It would unquestionably increase the traffic capacity of Main Street. But in depriving all vehicles of the right to stand at the curbs, even for short periods of time, it would prove a serious blow to retail business.

The real parking problem on Main Street is how to confine the parking privilege to shoppers while excluding non-shoppers. How to allow those who are especially convenienced by parking on Main Street to park there, while prohibiting those who are not, is an object which can probably be best achieved by limiting the parking privilege on Main Street. A one-half hour time limit on Main Street, with longer or no time limits on other streets, would at one stroke remedy one of the worst abuses of the parking privilege on this street—it would put an end to half-day and all-day parking. Limiting the parking privileges on Main Street to thirty minutes would almost quadruple the number of cars able to park on the street.

A large part of the down-town street congestion in Paterson is due to machines cruising around in search of a place to park. Every day many people wishing to stop on Main Street are forced to park their cars several blocks away, because the space that should be reserved for them is monopolized for hours at a time by the cars of non-shoppers. In some cases, those cars are owned by shopkeepers who are so thoughtless as not to realize that by parking in front of their premises they barricade their stores to prospective customers.

The distance an owner may reasonably be expected to walk to his destination after parking his car varies more or less in the same ratio as the time it takes to perform his errand. If his errand is quickly performed, he will wish to park immediately in front of the premises; if his errand is a long one, he will still, of course, wish to park in front of the premises, but where this is impossible he may be induced to park at a proportionately greater distance. This distance in a city like Paterson does not, at the outside limit, much exceed a quarter of a mile or the equivalent of a five-minute walk. If a parking space, either in the street or elsewhere, is not available within a five-minute walk of one's destination, the advantage of proceeding thence in a car as against a trolley or jitney is largely lost.

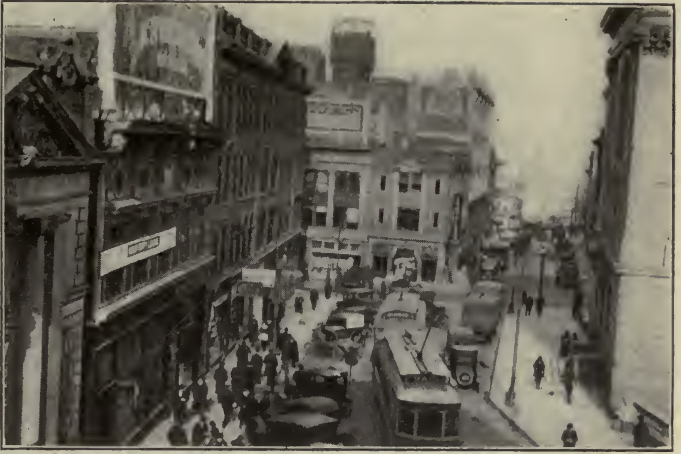
The Need for Public Parking Spaces

Conditions have not, as yet, come to such a pass in Paterson that one cannot park within a five minutes' walk of his destination. Even when traffic is most congested, ample parking space is to be found within that time limit of the shopping and office center. But traffic is growing so fast that it seems wise for the city to acquire public parking spaces on the fringes of the business area while they are still obtainable at reasonable prices. To widen streets to provide additional space for parked cars is unthinkable. It is entirely too expensive. To buy exclusive parking spaces is much cheaper.

These public parking spaces should be acquired at strategic points where the "half days" and "all days" could be parked without entering and congesting the business district. In other words, they should be parked immediately outside of the downtown area. The amount of land acquired should be determined with a view to accommodating all vehicles parked for more than an hour, so that all the down-town streets, in so far as parking is permitted on them, can be reserved for the use of shoppers.

Except on the south side of Market Street, cars are ranked in Paterson. On Market Street, however, the width of the street admits of cars being parked on one side and ranked on the other; that is, on one side the length of the car is at right angles to the curb; on the other side, parallel to the curb. On the parked side, the cars are invariably backed into place. Parking has the very distinct advantage over ranking in that the same street length accommodates approximately double the number of vehicles.

At the rate at which traffic is increasing, it is only a question of time how soon the parking of cars on Market Street will have to give place to ranking, but as long as the cars are parked, they should be parked with the front rather than the rear next to the curb. It is much easier to drive into than to back into a space between two cars.

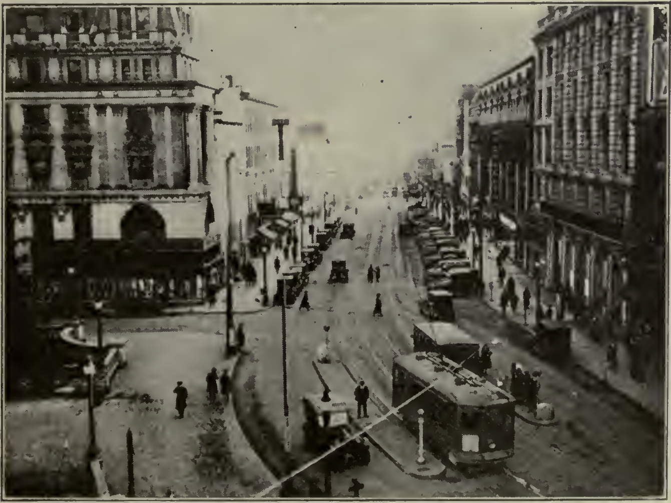


WASHINGTON STREET, PATERSON, LOOKING NORTH
Showing irregular parking just south of Ellison Street

In approaching the subject of parking, it is well to remember that people must park their cars as convenient to their destination as possible; and that the length of time they may park is as variable as the length of time it takes them to perform their several errands. Many people will wish to park a few minutes; some, several hours; others, all day; but whether the time is short or long, they must be enabled to park somewhere not too far from their destination.

It is not to be assumed, however, that everybody has a right to park wherever he chooses, or for as long as he pleases. When the public is embarrassed more than the individual is convenienced, then the privilege must be curtailed. On some streets it may have to be limited to a short period; on others, entirely prohibited. As the population and business in a community increase, its parking regulations will have to be revised—the parking time limits reduced, and the prohibited zones enlarged, until, finally, machines will, in a large portion of the down-town business area, be allowed to stop merely for a sufficient time to pick up and discharge passengers.

When that time arrives, parking spaces must be provided off the public streets. To a degree the need may be met by commercial garages or by private parking spaces, or perhaps by department stores and other large owners of delivery trucks placing their private garages at the service of their customers. Although these efforts are all very laudatory and in some instances appreciably help to fill the need, they do not fill the whole need. Many persons cannot afford to store their cars in commercial garages, even though they pay only one fee per day for the privilege. Others, able to pay a single fee per day, are in and out of their shops and offices so many times a day that, were they to have to pay a fee each time that they withdrew their cars, the cost would amount to a very pretty penny each year. Garages owned by department stores and placed during the day at the disposal of customers do not, of course, reach that large part of the public which does not shop every day. So there still remains the need of public parking spaces other than the streets, a need which will be more difficult and more costly to meet each day it is put off.



MARKET STREET, PATERSON, N. J., LOOKING EAST
Cars incorrectly parked on the south side and ranked on the north

Since the presentation of the report on the parking problem, quite a number of advances have already been made. For one thing, an ordinance has already been passed prohibiting the construction of any curbstone pumps in the future for the sale of gas. Hereafter all gas pumps will have to be located upon private property. Another thing which has received attention is the matter of traffic signs. Recently an appropriation was made providing for the purchase of an additional number of traffic signs to direct different routes. The ordinance for one street opening has already been passed and estimates have been made of the cost of acquiring necessary property for opening another street. It is expected that the ordinance for opening this street will be passed within a few weeks. The matter of carrying out the proposed parking regulations is also making progress. The Chamber of Commerce and business men of the city have unanimously gone on record as approving the purchase of public parking spaces in the various parts of the downtown section, and this irrespective of cost. The matter of re-routing trolleys and jitneys is now being taken up with the parties concerned in each instance. It is expected that quite a bit of progress along all these lines will be made within the next few months.

Centenary of Frederick Law Olmsted, Senior

By Theodora Kimball

(Editor of the Olmsted Papers*)

THIS year marks the centennial of the birth of Frederick Law Olmsted, the great landscape architect, one of the first exponents of our modern city planning movement in America. Born at Hartford, Conn., and privately educated, he became a farmer by profession, interested in rural improvement and the landscape development of his estate.

In 1857, almost by chance, Mr. Olmsted became the superintendent of the new Central Park just being created in New York, the first landscape park in America. In partnership with Calvert Vaux, an English architect in New York, he won the competition for a design for the park, and was made its responsible chief, continuing in this capacity with a few interludes until 1878. The firm of Olmsted & Vaux soon became established in the new profession of landscape design, in which Downing had been their most notable precursor. During the Civil War Mr. Olmsted was one of the leaders in organizing and directing the United States Sanitary Commission, out of which later came the Red Cross. After the war, Mr. Olmsted's professional practice grew extensively, embracing park and land subdivision work in both East and West.

In connection with the recently announced Sage Foundation's Plan of New York and Its Environs, it is of particular interest to note that Mr. Olmsted during the seventies was concerned in the laying out of the upper city and in numerous planning problems entailed by the growth of the New York Region.

About 1875 he was consulted regarding the development of parks for Boston, and in 1880 removed his headquarters from New York to Boston, finally settling in Brookline. His work in designing parks and park systems took him all over the country. Among the cities to which he gave such advice at this later period may be noted Boston, Detroit, Buffalo, Rochester, Trenton, Wilmington, Knoxville, Nashville, Louisville, Kansas City, Chicago, Milwaukee, Hartford and New York. He cooperated in the Niagara Reservation plan and designed the grounds for the United States Capitol in Washington. In all his work he insisted on the larger relations of his design to the life of the community as a whole. From 1891 to 1893 he cooperated with Daniel H. Burnham and other artists in designing the World's Fair at Chicago.

Mr. Olmsted did more than any other man to establish the profession of landscape architecture in America, to help inculcate ideals of orderly city growth, and to bring to urban population the refreshment afforded by the landscape beauty of large parks.

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* Volume I of the Olmsted Papers, "Early Years and Experiences," to be published by G. P. Putnam's Sons, will be issued during December.

Modernizing the Filter Plant of the Charleston Water Department

By F. B. McDowell, Jr.
Assistant Manager and Engineer, Commission of Public Utilities, Charleston, S. C.

WHEN the city of Charleston, S. C., purchased the water-works in 1917, the filtering equipment consisted of twelve 500,000-gallon New York Continental Jewell mechanical filters, housed in the eastern end of the pumping-station and occupying a floor space of 138 by 55 feet. Ten of the units were installed with the building of the plant in 1903, and the other two were erected in 1910. These were circular tub filters supported upon timber bents. The filter medium was sand and gravel, underdrained by wrought iron pipe laterals fitted with brass strainers. The filters were washed by a steam-driven centrifugal pump, the operation of which in recent years has deprived the high-pressure pumping units of the requisite amount of steam for their proper operation. This has been shown by a drop in pressure in the distribution system during the period of washing.

By 1918 the city had outgrown the filters, which were beginning to need too frequent and costly repairs. Accordingly, the Commission decided to build a larger and more modern filter plant. As the water comes from the sedimentation basin to the filters, it is acid and seriously corrodes the underdrain system, causing high renewal costs. Because of this experience with the old plant, the Commission insisted that the new filters should be provided with an underdrain system of non-corrosive material. The Wheeler collecting and distributing system is built on the sub-bottom and covers the channel. This patented bottom is made of rich cement mortar and is formed by numerous tapering cylindrical collecting drains extending transversely across the filter from the middle collecting channel to the side walls. Spaced every 12 inches along the top of these drains is a ⅝-inch-diameter brass ferrule which forms the apex of an inverted pyramid 9 inches square and 6 inches deep. These pyramidal

A VIEW OF THE OLD FILTER PLANT AT CHARLESTON, S. C., BEFORE BEING REFITTED WITH CONCRETE FILTERS depressions, spaced 12 inches on centers, number 342 per filter. Each depression serves as a nest for five 3-inch-diameter cement balls and nine small hard-baked clay balls which nearly fit the interstices of the top layer of the cement balls.

Plans and specifications were prepared in January, 1920, providing for the installation of fourteen 1,000,000-gallon reinforced concrete rapid sand filters upon the same floor space occupied by the 6,000,000-gallon plant. The contract was let for razing the old 76-foot stand-pipe having a diameter of 18 feet, located on George Street, and its reerection at the pumping-station to serve as a wash-water tank, thereby doing away with the wash-water pump. Bids were received for the erection of the filters, but as the unit prices were higher than those estimated by the Commission, and as the work was to be performed without interruption to the operation of the plant, the Commission decided to do the work with its own organization, which proved successful.

The Rehabilitated Plant

The new filters are arranged in two rows of seven units with the back walls against the side walls of the building. Between the rows, and lying longitudinally, are the filtered water flume and open waste wash water drains of the old plant, which were incorporated in the new work. Above the flume, which was covered over in the new work, is a pipe gallery and then an operating floor elevated 10 inches above the top of the filters.

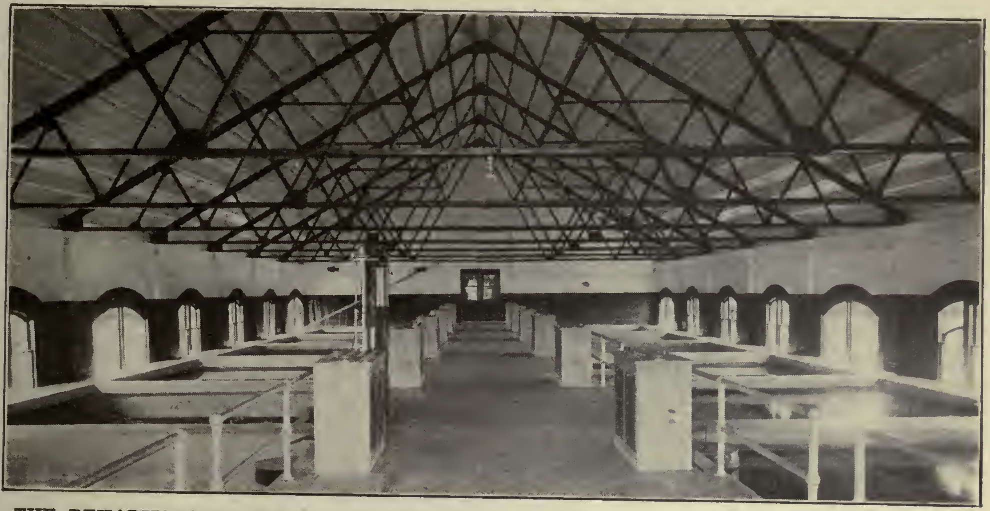
The filters are rectangular, with inside dimensions of 21 feet 4 inches by 18 feet 6 inches by 8 feet deep, providing a filtering area of 352 square feet. The filters are formed by reinforced concrete walls 11 inches thick. The rear and side walls turn at the top in the form of T-beams, which serve as walks. The sub-bottom is depressed in the middle, lengthwise of the filter, to form a rectangular collecting channel, and is supported not only by the side walls but by low longitudinal concrete piers, spaced midway between the side walls and the channel. Extending across the filter 14 inches from its front wall is a partition wall 6 inches thick, which forms a stilling pool for the influent and a discharge bay for the waste wash water. The front wall is fitted with castings for connection with the influent, effluent and wash water piping in the gallery. The bottom of the influent stilling bay contains a casting to secure the waste wash water valve.

Each filter is equipped with an influent, an effluent, a wash water inlet, a wash water outlet, and a filter-to-waste valve, as well as a Simplex controller to regulate the rate of filtration and a loss of head gage. All these valves are fitted with cylinders so that they can be operated hydraulically from the marble table for each filter on the operating floor. Covering the Wheeler bottom is 11½ inches of gravel varying from a bottom layer composed of stones which pass through a ⅞-inch hole to an upper layer composed of fine stone that passes through a ⅛-inch-diameter hole. Covering the gravel is a 28-inch bed of sand. Running the length of the filter are four cast iron troughs with semicircular bottoms. These are connected at the front of the filter to castings in the 6-inch partition wall and are anchored to the rear wall of the filter at their far end. The troughs are supported at intermediate points by wrought-iron pipe posts. As a requisite to economical and efficient operation, the upper edges of the troughs, which are 26 inches above the top of the sand-bed, are absolutely level.

Plant Rebuilt Without Shut-down

The new concrete filters were constructed without interference with the operation of the plant. After the wash-water tanks were put into service the wash-water engine was removed, giving sufficient space in the engine room end of the filter room to construct one concrete unit on each side of the building without disturbing the tub filters. With these new filters in service, two of the old filters on the same side of the building were removed, which made available room for two more concrete units. This general plan of successively razing the tub filters and building the concrete units in pairs was pursued until the capacity of the new filter units equaled the capacity of the tub filters. Then the remaining tub filters were razed completely and the remaining concrete units were installed at the same time. Considerable ingenuity was required at times, however, to coordinate the old and the new piping.

Prior to the actual construction of the first filter, there was some uncertainty as



THE REHABILITATED FILTER PLANT AT CHARLESTON, S. C., SHOWING NEW CONCRETE FILTERS AND FILTER CONTROL EQUIPMENT

to whether the cement floor of the old filter room would sustain without undue settlement the load that the new filters would impose upon it. A test was made by selecting one of the tub filters in which surface cracks in the floor indicated its most vulnerable point. The tub was filled with sand, in order that the timber bents supporting it might transmit to the floor a load in excess of the calculated weight of the new filters. Levels taken before and after the loading showed that the floor would provide a satisfactory foundation.

Another preliminary measure was the reinforcement of the foundation carrying the 13-inch partition wall between the filter room and the engine room, where the difference in elevation of the filter room floor and the engine room basement floor is 12 feet. This was reinforced by constructing a concrete wall 2½ feet thick across the entire width of the building, with a foundation below that of the building wall.

The Construction Plant

Several different types of construction plant were considered. That finally decided upon consisted of an extension of the railroad siding for the receipt of all material, a 5-ton capacity stiff-leg derrick with a 60-foot boom and bull wheel, a 25-horse-power Clyde hoisting engine with a boom swing attachment, and a ½-yard clam-shell bucket, one 10-cubic-foot capacity Smith tilting concrete mixer and engine, elevated gravel and sand storage bins and a drying and screening plant to grade the filter gravel. Also, a house for the storage of two carloads of cement was constructed.

This plant was constructed at the far end of the pumping-station and so arranged that the derrick unloaded all the material, elevated the cement to the charging platform of the mixer, and filled the elevated storage bins, with a minimum loss of motion. As it was desired to make a continuous pour for two filter units containing 80 cubic yards, the whole plant was designed with that end in view. It was estimated that the pouring of the two units would take 10 hours; actual performance, however, required only 6 to 7 hours. The forms were made in convenient size with knocked-down panels of ⅞-inch T & G face boards, secured to frames made of 2 by 6-inch dressed lumber. The inside surfaces were cleaned and oiled before being set up. The forms were held together with ¾-inch wrought-iron bolts, and held apart by ¾-inch black iron pipe spacers, one end plain and the other fitted with a coupling to receive a screw plug after the forms were removed. At all right angles triangular molding was used.

As the two units were to be made monolithic, which is so essential in water-tight construction, the forms making the inside of the wall had to be supported independently of the other forms, in order that the sub-bottom and side walls might be formed simultaneously. These inside forms were hung from an upper rectangular frame of 6- by 6-inch timbers, with their corner and intermediate posts resting upon a lower frame of similar construction. The lower frame was supported clear of the sub-floor on eighteen 2-inch locked-nut washers screwed on pipes resting on the filter room floor. The pipes were encased in loose-fitting cylindrical sheaths of No. 28 gage sheet steel, and were so spaced that they came in the middle of the low longitudinal piers. After the frames and pipes were removed, the sheaths were filled with cement grout. This is probably the first time that inside forms were supported independently, the usual practise being to pour the bottom and then pour the side walls. This latter method obviously produces objectionable construction joints, which are obviated by the newer method. Havemeyer deformed square bars, varying in size from ¼- to ¾-inch, were used for reinforcing. It was secured and spaced by the use of spacer bars and ty-chairs. A 1:2:4 concrete mix was used. The stone and sand were measured in a sheet-metal-lined, sloping-bottom charging hopper, located just beneath the outlet chute of the elevated storage bins. The cement was then added. The necessary quantity of water to make a good mix was fed into the mixer from a barrel fitted with a quick opening and closing valve. After the batch was well mixed, it was completely discharged at one dumping into a reserve hopper with a capacity of 1½ batches, which reduced to a minimum the interval between batches. It was delivered to the forms in wheelbarrows of 2½ cubic feet capacity. The concrete was well spaded in the forms with long-handled spades made on the job.

Immediately after the forms were stripped, the Wheeler bottom was placed. Metal forms were used for this work, and the mixture of 1 to 2 cement mortar was used. The Wheeler bottom contains ¼-inch square reinforcing bars and is secured to the sub-bottom of the filter by hairpin steel that was placed with the pouring of the filter. Upon the completion of the Wheeler bottom the balls, gravel and sand were placed.

Preparing the Sand

The gravel was obtained from the old filters and from gravel purchased locally. That obtained from the old filters was heavily coated with colloidal matter, which was removed prior to regrading by washing it in the concrete mixer until the discharged water ran clear. The sand of the old filters was salvaged. Since the extra quantity of the desired graded sand could not be obtained locally, nor purchased from a distance except at great expense, experiments were made to determine the feasibility of grading the local sand hydraulically by washing it in a small wooden tank equipped with a miniature Wheeler bottom. The results obtained in the test were most satisfactory, showing that the local sand could be made acceptable by washing and then skimming off the finer grains brought to the surface by a high velocity wash. Thus, when the sand was placed in the new concrete units, an excess quantity was put in to allow for skimming. The skimmings, however, were not a loss, but were used afterwards in the mortar of the concrete for the engine room floor.

The construction of the filters necessitated the making of many changes in the filter building, particularly the complete closing of two large doorways and the partial closing in of seven large windows on each side of the building.

Acknowledgment.—Prepared from a paper presented before the Twelfth Annual Convention of the Tri-State Water and Light Association.

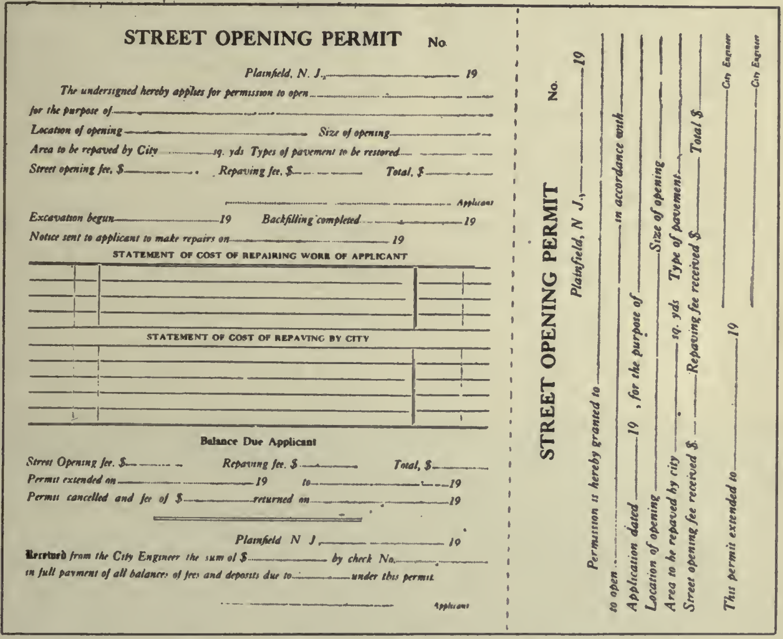
Wastefulness or Stupidity?

America's fire loss has reached the proportions of a national calamity and we are becoming a criminally careless people. This matter of burning four or five hundred million dollars' worth of property every year has ceased to be a matter of no concern. Our increasing fire loss stands as a serious indictment of the American public. Our 1921 fire loss means that five hundred million dollars' worth of our natural and created resources are wiped out of existence. There is a prevailing opinion that fire insurance companies in some mysterious way make good our loss by fire. The proceeds of a fire insurance policy may reimburse the individual for the loss he has sustained, but no amount of money can restore a burned structure; therefore, when a fire occurs, everybody loses.

The Control of Pavement Openings

By Alexander W. Vars
City Engineer, Plainfield, N. J.

THE principal feature in the regulation of openings in completed pavements in Plainfield, N. J., is the requirement that a substantial deposit be made with the city to cover the cost of the restoration of the pavement, and that such restoration be made by city forces rather than by the party that made the opening, who is seldom or never properly equipped to do the work satisfactorily. In order that the ordinance controlling pavement openings may accomplish the purpose intended, it is necessary that the city have at least two men skilled in pavement construction assigned to the work of repairs. If this is done, I believe that the difficulties due to pavement openings will be practically eliminated. It is the custom in Plainfield to require the laying of sewer. gas, water and electric connections in advance of the construction of permanent pavements, as provided by the "Municipalities Act" of New Jersey. This involves considerable trouble and expense, but it is felt that the result obtained justifies the strict requirements.



STREET OPENING PERMIT No.

Plainfield, N. J., ______ 19

The undersigned hereby applies for permission to open ______
for the purpose of ______
Location of opening ______ Size of opening ______
Area to be repaved by City ______ sq. yds Types of pavement to be restored ______
Street opening fee, $ ______ Repaving fee, $ ______ Total, $ ______

______ Applicant

Excavation begun ______ 19 Backfilling completed ______ 19
Notice sent to applicant to make repairs on ______ 19

STATEMENT OF COST OF REPAIRING WORK OF APPLICANT

STATEMENT OF COST OF REPAVING BY CITY

Balance Due Applicant

Street Opening fee. $ ______ Repaving fee. $ ______ Total, $ ______
Permit extended on ______ 19 to ______ 19
Permit cancelled and fee of $ ______ returned on ______ 19

Plainfield N J ______ 19

Received from the City Engineer the sum of $ ______ by check No. ______
in full payment of all balances of fees and deposits due to ______ under this permit

______ Applicant

No. ______

STREET OPENING PERMIT

Plainfield, N J., ______ 19
Permission is hereby granted to ______
to open ______ in accordance with
Application dated ______ 19 , for the purpose of ______
Location of opening ______ Size of opening ______
Area to be repaved by city ______ sq. yds Type of pavement ______
Street opening fee received $ ______ Repaving fee received $ ______ Total $ ______
This permit extended to ______ 19 ______ City Engineer
______ City Engineer

FORM OF STREET OPENING PERMIT USED IN PLAINFIELD, N. J.

The ordinance regulating the making of excavations and openings in the streets of Plainfield, which went into effect September 1, 1921, requires that no excavations of the street surface or under the street surface may be made without the issuance of a separate permit by the city engineer for each opening made. Applications must be made in writing and signed by a properly authorized person on a form furnished by the city engineer. The application reproduced herewith states the location and approximate size of the opening to be made. Work on the opening must be made within ten days of the date of the issuance of the permit and completed as soon as possible.

A deposit of $10 for each proposed opening not more than 50 feet in length in paved or unpaved streets is required, with a further deposit of $2.50 for each additional 50 feet of length or fraction thereof. The deposit is retained by the city for a period of six months from the date of the permit or from the date on which the permit is extended, to guarantee the proper performance of work done by the applicant and the proper maintenance of the excavation. If, during the six-months period, the filling of the opening should settle or any street surface over the opening require repairing, except where a pavement has been relaid by the city and the applicant fails to make repairs as required within three days after being notified by the city engineer, the cost of doing the work is paid from the deposit.

In addition to the deposit for the permit, a further deposit is required from each applicant for pavement openings. in accordance with the type of pavement. For stone, block, brick, asphalt or other material having a foundation of concrete, $7 per square yard is required; for openings to be made in cement concrete pavements, $6 per square yard; for openings in pavements of bituminous concrete or bituminous macadam with a crushed stone or Telford base, or of stone block on sand foundation, $4 per square yard; for openings in macadam pavement, $3 per square yard.

All pavements over street openings are required to be replaced by the city within six months after the opening is made, the cost being defrayed by the deposit mentioned above. This cost includes the cost of consolidating the material used to fill the openings and of the relaying of the pavement. The balance of the deposit is returned to the applicant six months after the date of the permit, if the street surface then is in good condition, or as soon thereafter as the necessary repairs are made, upon the presentation of the original permit to the city engineer and the signing of a receipt for the amount returned to the applicant.

It is required that all excavations be made in open trenches, except where otherwise directed. The sides of the excavation must be supported by suitable planks and shoring, which is required to be drawn as the work progresses, unless it seems advantageous to leave it in place. Trenches are required to be backfilled by depositing layers of earth not more than 6 inches in depth, thoroughly ramming them and flushing with water if necessary. It is forbidden to have surplus earth over filled openings so that it will interefere with traffic. All old paving material is usually placed over the trench in as good condition and as near the street grade as practicable, and all surplus material and rubbish of every kind is removed by the applicant.

If excavation is made in tunnels beneath a pavement having a concrete base, the tunnel is backfilled by the applicant with concrete composed of one part of portland cement and nine parts of hard steam boiler cinders or other approved material, tamped in place so that the cavity is completely filled.

If an opening is made in a pavement that is of concrete or one that has a concrete base, the pavement is cut 18 inches wider than the width of the trench, that is, 9 inches wider on each side, and the edge of the old concrete is beveled so as to make the concrete cut 4 inches wider at the top than at the bottom. The new concrete pavement or foundation is made 2 inches thicker than the original concrete and is reinforced with No. 10 expanded metal or equivalent wire fabric.

Cost of Federal Aid Highways

IN his address before the annual meeting of the Chamber of Commerce of the United States in Washington, Thomas H. MacDonald, Chief, Bureau of Roads, Department of Agriculture, gave average costs covering 11,017 miles of Federal Aid highways, as follows:

Class 1, including the graded and drained, the sand clay and gravel types, average cost $11,320 per mile.

Class 2, covering macadam, waterbound and bituminous types, $20,540 per mile.

Class 3, covering the bituminous concrete, portland cement concrete and brick types, $36,100 per mile.

Mr. MacDonald pointed out that it does not follow that because the average cost of a Class 1 roadway is one-third that of a Class 3 roadway Class 1 roads should be built to the exclusion of the other. The Class 3 roadways, he said, are capable of rendering many times the service that the Class 1 types are able to give.

The Development of Detroit's Street Lighting System

By Reducing Voltage per Lamp and Using New System of Flat Electrodes, the City Has Been Able to Increase Number of Lamps by More Than 20 Per Cent

By C. A. B. Halvorsen

DETROIT, MICH., was one of the first cities in the United States to adopt the electric arc lamp for street illumination. The first contract was awarded in 1883 for 22 arc lamps, at a contract price of $152 per lamp per year. In later years this was increased to $239 per lamp, and then from year to year lowered, until the last contract price paid to a private corporation was $132.41 per lamp per year. This was higher than the rates paid in about 80 other cities. Moreover, the service was very unsatisfactory. Therefore, the city of Detroit built a municipal lighting plant, from which the first street lamps were lighted in April, 1895. The first year's operation lowered the cost of street lighting to $84.70 per lamp for the year, and throughout the entire period of operation of the plant the cost of street lighting has at all times been considerably lower than would have been possible under a contract.

On June 30, 1921, there were 13,407 street lamps in service, of which 12,996 arc lamps were served from the public lighting plant and the remainder operated by the Detroit Edison Company in territory annexed and in which contracts with the company had not expired at the time of the annexation. The municipal lighting plant consists of the main power-station, six sub-stations, and the distribution and lighting systems. On June 30, 1921, the investment in the entire lighting system was $5,667,210.32. Of this, $1,008,602.42 represents the cost of the power station, $2,297,963.31 the investment in conduits and cables, $1,186,310.13 in poles and aerial lines, $443,505.00 in sub-stations, $392,480.73 in arc lamps, and the balance in office

A VIEW OF SOME OF DETROIT'S WELL-LIGHTED STREETS building, pole yards, etc.

The recent demand for additional street lamps, resulting from the tremendous increase in the population of Detroit, due to the automobile industry, is of interest and importance to every city confronted by a like problem. By a reduction in voltage per lamp and by the use of flattened electrodes, it has been made possible to add 20 per cent per circuit without necessitating expensive rearrangement of station equipment and rewiring.

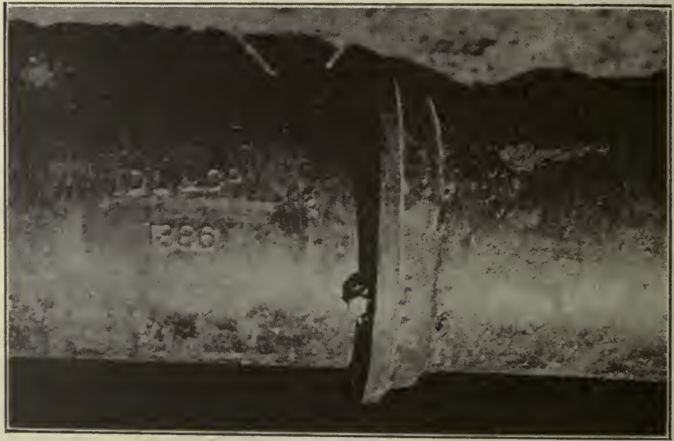
When the system was first installed in Detroit, the lamps in the outlying districts were rather widely spaced. With the rapid increase in the density of population, there came a demand for additional lamps and a reduction in the distances between those then installed. The problem was to accomplish this economically.

The 4-ampere magnetic lamps as originally installed consumed approximately 320 watts at 4 amperes, 78-80 volts. By reducing the voltage per lamp to about 67 volts and by the use of the flattened electrode placed with the major axis across the roadway, practically the same ilumination on the street surface was maintained. At the same time the demand for less illumination toward the residence front was met.

This change in adjustment of the lamps made it possible to install 20 per cent additional lamps per circuit, and thus the requirements of the city for lamps of high power, closely spaced, was met without requiring a costly rearrangement either on the street or at the station. A practical endorsement of the new street lighting system has recently come in the form of a contract executed by the city of Toledo, Ohio, calling for the same units as used in Detroit and embodying like arrangements of the electrodes, together with a lowering of the voltage requirements.

Cast Iron Pipe Relaid After 36 Years of Service

A PIPE-LAYING job of unusual interest is shown in the photographs reproduced here. This 24-inch pipe is being relaid after 36 years of service, and to all appearances is as good as new pipe. The pipe was originally laid in Omaha in 1886 by the old American Water Works Company, formerly owner of the water-works of that city. It served as a pumping line from the old station at 6th and Burt Streets until, on account of the contamination of the supply, this station was abandoned in 1912. It was kept in service as a supply line in its original location until early this year, when it was taken up and relaid as a pumping line from the Walnut Hill Station. The thickness of the pipe is the same as the present Class C American Water Works Association standard.



A PORTION OF THE 24-INCH PIPE TAKEN UP IN OMAHA, NEBR., SHOWING MAKER'S INITIALS AND DATE OF CASTING

Concerning the condition of the pipe, Homer V. Knouse, Chief Engineer of the Metropolitan Utilities District, Omaha, says: "The condition of this pipe when relaid was practically the same as when originally laid. The photograph showing the maker's initial and date of manufacture indicates that there has been practically no corrosion, the thin raised letters being still clear and distinct."

How Much Should a City Health Officer Be Paid?

By Kenneth M. Gould
Rockefeller Foundation, New York City

THE data herewith presented are chiefly derived from the Report of the Committee on Salary Standards, of the American Public Health Association, published in the August (1922) issue of the *American Journal of Public Health.* I am indebted to this committee, composed of Dr. Carroll Fox, chairman, Dr. S. J. Crumbine, Dr. J. A. Ferrell, Dr. J. R. Phelps, Mrs. Maud Wood Park, and James A. Tobey, secretary, and to the American Public Health Association for permission to quote material relating to municipal health officials.

This committee, and the Committee on Municipal Health Department Practice, of the same Association, as well as a number of other sanitarians, have been collecting data over a period of several years, the chief conclusion being that American health officers in all branches are seriously underpaid. We shall refer briefly to the results of some of these investigations:

1. *Data of* 1918.—In 1918, Dr. L. K. Frankel, who was then president of the American Public Health Association, collected statistics from 417 municipal health officers.[1] He found that 60 per cent of these health officers received less than $25 a week. Of the total, only 36.7 per cent were full-time health officers, and of these, 25 per cent received less than $25 a week; 63.3 per cent were part-time officers, and 80 per cent of these received under $25 a week. The average salary for the entire group was $1,383 a year. The minimum salary was $50 a year, and the maximum $7,500. The minimum and maximum salaries in cities having a population of 75,000 to 100,000 and in cities having a population of 100,000 to 250,000 were the same, the minimum being $1,500, and the maximum $4,000.

2. *Data of* 1920.—In September, 1920, Dr. J. A. Kappelman, of Canton, Ohio, collected statistics of salaries of health officers in 115 cities. The average was $2,727.85 a year. The range of salaries may be summarized as follows:

Salary	Number	Per Cent
$7,500	1	.9
6,000	1	.9
5,000	6	5.2
4,000-4,800	9	7.8
3,000-3,780	31	27.0
2,000-2,800	37	32.2
1,000-1,900	25	21.7
300- 600	5	4.3
Totals	115	100.0

3. *Data of* 1921.—The First Report of the Committee on Municipal Health Department Practice, of the American Public Health Association, contains the following discussion of the salaries of health officers, from which we quote:[2]

"The largest cities, those having more than 500,000 population, as we should expect, pay higher salaries than do the smaller cities. Thus we find that 75 per cent of the larger cities for which we have data pay their health officers over $5,000 a year; 60 per cent of the cities of population of 250,000 to 500,000 pay their health officers $5,000 a year or more; and 17 per cent of the cities studied under 250,000 population pay their health officers $5,000 or more for an annual salary. In the first group of cities the range is from $2,200 for a part-time health officer to $10,000 for a full-time officer. In half the cities of this group the salary is $7,000 or over.

"In cities of the second group, the range is from $1,200 for a part-time health officer to $6,000 in one city, 18 cities paying $4,000 or over, and 18 paying less than $3,000, the health officers in the latter group, however, being on part time except in two instances."

Population	Total Cities	Whole Time	Part Time	$7,500 and Over	$5,000-$7,000	$3,500-$4,999	Under $3,500
500,000 and over	12	11	1	6	3	2	1
250,000 to 500,000	10	9	1	0	6	4	0
Under 250,000	54	31	23	0	9	17	28
Totals	76	51	25	6	18	23	29

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[1] L. K. Frankel: "The Future of the American Public Health Association." *American Journal of Public Health,* February, 1919.

[2] First Report of the Committee on Municipal Health Department Practice, reprinted from *American Journal of Public Health,* January and February, 1922.

The preceding table indicates the detailed situation in the 76 cities for which data were available at the time of this report.

The following table shows the salaries of executive health officers for 79 cities, including all American cities of more than 100,000 population, and several between 80,000 and 100,000, arranged alphabetically by states. The population figures are taken from the Census of 1920, but the data on salaries were gathered in 1921. Part-time health officers are indicated by asterisks:

ANNUAL SALARIES OF MUNICIPAL HEALTH OFFICERS, 1921

STATE AND CITY	Population	Salary
ALABAMA		
Birmingham	178,806	$4,500
CALIFORNIA		
Los Angeles	576,673	3,600
*Oakland	216,261	3,000
San Francisco	506,676	7,500
COLORADO		
Denver	256,491	4,000
CONNECTICUT		
Bridgeport	143,555	5,000
Hartford	138,036	4,000
New Haven	162,537	3,300
DELAWARE		
Wilmington	110,168	1,300
DISTRICT OF COLUMBIA		
Washington	437,571	4,000
FLORIDA		
Jacksonville	91,558	4,800
GEORGIA		
Atlanta	200,616	3,300
Savannah	83,252	4,000
ILLINOIS		
Chicago	2,701,705	10,000
INDIANA		
Indianapolis	314,194	5,000
IOWA		
Des Moines	126,468	3,300
KANSAS		
Kansas City	101,177	3,000
KENTUCKY		
Louisville	234,891	3,000
LOUISIANA		
*New Orleans	387,219	5,000
MARYLAND		
Baltimore	733,826	4,250
MASSACHUSETTS		
Boston	748,060	7,500
*Cambridge	109,694	2,400
Fall River	120,485	3,000
*Lawrence	94,270	2,500
Lowell	112,759	2,306
New Bedford	121,217	[1]4,000
Springfield	129,614	2,800
*Worcester	179,754	2,800
MICHIGAN		
Detroit	993,678	7,500
Flint	91,599	5,600
Grand Rapids	137,634	5,900
MINNESOTA		
*Duluth	98,917	2,400
Minneapolis	380,582	5,000
St. Paul	234.698	4,000
MISSOURI		
Kansas City	324,410	4,800
St. Louis	772,897	5,000
NEBRASKA		
*Omaha	191,601	3,500
NEW JERSEY		
Camden	116,309	2,000
Elizabeth	95,783	3,500
Jersey City	298,103	3,500
Newark	414,524	6,500
*Paterson[2]	135,875	1,560
*Trenton	119,289	2,250
NEW YORK		
*Albany	113,344	3,500
Buffalo	506,775	6,000
New York	5,620,048	7,500
Rochester	295,750	4,200
*Schenectady	88,723	2,600
*Syracuse	171,717	5,000
Yonkers	100,176	5,000
OHIO		
Akron	208,435	3,800
Canton	87,091	5,000
Cincinnati	401,247	6,000
Cleveland	796,841	5,500
Columbus	237,031	3,780
Dayton	152,559	4,000
*Toledo	243,164	2,100
*Youngstown	132,358	2,280
OKLAHOMA		
*Oklahoma City	91,295	3,600
OREGON		
Portland	258,288	†
PENNSYLVANIA		
*Erie	93,372	2,860
Philadelphia	1,823,779	10,000
Pittsburgh	588,343	7,000
Reading	107,784	3,000
*Scranton	137,783	2,500
RHODE ISLAND		
Providence	237,595	6,000
TENNESSEE		
*Memphis	162,351	3,000
Nashville	118,342	3,600
TEXAS		
Dallas	158,976	4,400
*Fort Worth	106,482	1,800
Houston	138,276	4,800
*San Antonio	161,379	3,300
UTAH		
*Salt Lake City	118,110	3,300
VIRGINIA		
Norfolk	115,777	5,000
Richmond	171,667	4,000
WASHINGTON		
Seattle	315,312	5,000
Spokane[3]	104,437	3,600
*Tacoma	96,965	3,000
WISCONSIN		
Milwaukee	457,147	6,000

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* Part time.

[1] Salary for 1922. For 1921, salary was $3,500.

[2] During 1921 the health officership of Paterson was a full-time position at $3,600 a year. At present it has reverted to a part-time position at $1,560, owing to an unfortunate court decision.

[3] During the two-year period ending May 31, 1923, the Health Officer of Spokane is also acting in place of the Commissioner of Public Affairs, deceased. Under the regular routine, the health officership of Spokane is a full-time position.

The data in this table cover 12 cities of over 500,000 population, in which the average salary of municipal health officers is $6,779; 56 cities with a population of 100,000-500,000, average salary $3,771; and 11 cities with less than 100,000 population, average salary $3,623. The total number of cities represented is 79, making the average salary in all $4,207.

SUMMARY

Salary	Number	Per Cent
$10,000	2	2.5
7,000-7,500	5	6.3
6,000-6,500	5	6.3
5,000-5,900	13	16.5
4,000-4,800	16	20.3
3,000-3,800	22	27.8
2,000-2,860	13	16.5
1,000-1,800	3	3.8
Totals	79	100.0

Data on salaries of health officers in cities below 80,000 population are meager and have not been gathered very recently. In general, however, salaries are low, ranging between $1,000 and $3,000, and much of this is part-time service. The small city which cannot support a full-time man should consider the possibility of combining with neighboring towns to secure trained sanitary service.

Salaries of municipal health officers per 1,000 population tend to vary inversely as the size of the population served. In the groupings given above, the salaries per 1,000 vary from $1.33 (New York) to $12.82 (St. Louis) for the large cities; from

CITY	Director Div. Comm. Diseases	Director School Hygiene	Director Lab., Chemist or Bacteriologist	Director Food and Dairies	Sanitary Inspection	Vital Statistics	Public Health Nursing
Akron, Ohio	$ 2,740	$	$ 2,340	$	$ 2,280	$ 1,800	$ 1,980
Albany, N. Y.	$1,200	......	......	......	$1,250	$2,000	......
Atlanta, Ga.	1,680	......	2,700	......	......	......	......
Baltimore, Md.	3,000	......	1,800	......	......	......	......
Birmingham, Ala.	2,280	......	3,600	2,400	2,100	3,000	......
Boston, Mass.	......	2,000	3,300	3,300	3,300	3,300	......
Bridgeport, Conn.	3,300	3,600	2,000	2,000	2,200	1,400	......
Buffalo, N. Y.	3,300	......	1,800	2,460	2,460	3,300	......
Cambridge, Mass.	......	1,450	1,080	1,600-2,400	1,200-2,000	......	......
Camden, N. J.	2,280	......	1,500	2,000	1,900	......	......
Canton, Ohio	......	......	......	2,000	......	......	1,400
Chicago, Ill.	4,500	3,300	4,000	3,060	3,600	3,800	......
Cincinnati, Ohio	3,500	......	2,500	3,500	3,200	1,600	1,800
Cleveland, Ohio	3,800	......	1,800	......	2,170	1,750	......
Columbus, Ohio	3,780	......	2,680	2,480	1,980	1,000	1,380
Dallas, Tex.	3,000	......	......	1,500	1,500	1,800	......
Dayton, Ohio	......	......	2,700	......	2,400	......	2,400
Denver, Colo.	1,560	3,240	......	......	1,680	1,500	......
Des Moines, Iowa	2,700	......	2,100	2,400	1,860	......	......
Detroit, Mich.	6,000	1,500	4,000	3,600	4,200	4,500	......
Duluth, Minn.	1,500	......	3,000	......	2,100	......	......
Elizabeth, N. J.	2,400	3,100	1,800	1,700	2,000	......	......
Erie, Pa.	......	......	1,000	1,800	1,800	......	......
Fall River, Mass.	......	......	2,000	1,750-2,500	1,750-2,700	......	......
Flint, Mich.	......	4,400	3,500	1,800-2,500	2,400	1,300	1,800
Fort Worth, Tex.	1,400	......	1,500	1,800	3,400	......	1,500
Grand Rapids, Mich.	......	2,400	3,500	2,000	......	1,260	......
Hartford, Conn.	......	2,700	1,800	2,100	2,100	......	......
Houston, Tex.	2,220	......	2,400	1,920	2,040	1,620	......
Indianapolis, Ind.	......	......	......	......	......	......	......
Jacksonville, Fla.	......	1,700	3,000	......	2,400	2,100	......
Kansas City, Kan.	......	......	2,000	2,000-4,000	1,800	......	......
Kansas City, Mo.	2,400	......	1,920	4,000	1,800	1,820	1,200
Lawrence, Mass.	......	600	......	......	2,100	......	......
Los Angeles, Cal.	2,880	......	1,800-2,580	2,100	1,800	2,040	1,980
Louisville, Ky.	......	......	2,400	1,800	1,596	......	......
Lowell, Mass.	......	400	......	2,070	......	......	......
Memphis, Tenn.	3,500	......	2,400	3,000	......	......	......
Milwaukee, Wis.	3,180	4,200	3,000	2,700	2,700	2,340	2,280
Minneapolis, Minn.	3,150	......	2,640	2,400	......	1,500	1,620
Nashville, Tenn.	1,800	......	......	1,800	1,500	1,500	......
Newark, N. J.	1,980	......	5,500	2,448	2,772	......	......
New Haven, Conn.	2,970	1,500	2,500	......	......	......	......
New Orleans, La.	2,700	......	3,600	2,700	2,000	3,300	......
New York, N. Y.	5,600	......	6,500	3,500	4,580	5,500	......
Norfolk, Va.	2,000	......	2,400	2,000	1,880	......	......
Oklahoma City, Okla.	2,400	5,400	1,350	1,350	......	2,400	1,200
Omaha, Neb.	......	......	2,400	2,400	......	......	......
Paterson, N. J.	1,860	......	......	1,680	1,860	......	......
Philadelphia, Pa.	4,600	4,510	3,000	1,650-2,500	4,400	2,300	......
Pittsburgh, Pa.	4,000	2,280	3,378	2,034	4,000	2,208	......
Providence, R. I.	2,500	......	1,000	2,050-3,000	1,800	......	......
Reading, Pa.	600	......	990-1,080	4,400	3,000	1,330	1,200
Richmond, Va.	2,520	250	2,400	1,800-2,520	1,980	......	......
Rochester, N. Y.	......	2,000	1,874	......	1,800	1,650	......
St. Louis, Mo.	3,300	......	3,000	......	2,880	1,584	......
St. Paul, Minn.	......	......	2,000	2,400	......	2,040	......
Salt Lake City, Utah	1,800	1,980	1,680	1,980	1,980	1,600	......
San Antonio, Tex.	2,700	900	2,220	......	2,400	1,500	1,800
San Francisco, Cal.	......	......	3,000	3,000	3,000	......	2,400
Savannah, Ga.	......	1,800	3,600	2,200	1,800	1,500	1,440
Schenectady, N. Y.	1,200	......	......	600	1,300	1,900	1,200
Scranton, Pa.	......	......	1,380	1,650-1,980	......	......	......
Seattle, Wash.	1,980	......	3,420	2,880	......	......	......
Springfield, Mass.	......	......	2,600	......	2,200	......	......
Syracuse, N. Y.	2,400	1,200	3,000	......	......	2,000	......
Tacoma, Wash.	3,000	......	1,500	1,200	......	......	......
Toledo, Ohio	1,800	......	......	2,000	1,920	1,200	......
Trenton, N. J.	......	......	......	......	......	......	......
Washington, D. C.	......	......	2,750	1,800	1,800	1,800	......
Wilmington, Del.	5,100	5,100	......	......	......	......	......
Worcester, Mass.	......	......	......	......	......	......	......
Yonkers, N. Y.	......	......	......	......	......	2,300	......
Youngstown, Ohio	......	......	2,880	1,980-2,280	2,280	2,280	......
Total reporting	47	25	59	53	54	40	17
Average salary	$2,778	$2,460	$2,541	$2,312	$2,316	$2,116	$1,681

$8.63 (Toledo) to $43.18 (Norfolk) for the cities between 100,000 and 500,000; and from $24.26 (Duluth) to $61.13 (Flint) for the cities below 100,000. In general, therefore, one might say that a city of over 500,000 population ought to be able to pay its health officer not less than $5 per 1,000, with the exception of the very largest. A middle-sized city should pay at least $10 per 1,000, and considerably more if it is smaller than 250,000. A city of less than 100,000 population should pay a salary of not less than $25 per 1,000, a rate which should increase very steeply for the smaller towns.

A city which pays its health officer less than the average of the population group in which it falls is not only close-fisted with a faithful public servant, but is following the most short-sighted policy conceivable. No trained health officer with the proper background in both medical and sanitary studies and experience can afford to work for the pittances paid in some cities, and the cities pay the difference in the long run, in inferior service, poorer health protection, and higher death-rates. This is equally true of the cities which support only part-time officers. No conscientious officer can give his best service and devote part of his energy and thought to private medical practise.

The table on page 511 shows the salaries of the directors of various bureaus and divisions in city health departments, as gathered by the Committee on Salary Standards:

The conclusions and recommendations of the Committee on Salary Standards may be stated briefly as follows:

The salary to be paid a health officer depends upon a number of factors. Some of these are his training and experience, the population and type of place of which he is executive, his length of service, and finally, the economic conditions and the standard of living. The Committee believes that, in general, the present salaries paid to health officers are too low, and that they are not commensurate with the scientific training, personality, and professional responsibility involved.

The Committee further believes that the tenure of office of health officers should be made more secure, based entirely on merit without political considerations. Minimum salaries of qualified municipal health officers for full-time work should be based on the following scale, according to population:

POPULATION	Salary
1,500,000 and above	$10,000
1,000,000 to 1,500,000	7,500
750,000 to 1,000,000	7,000
500,000 to 750,000	6,000
100,000 to 500,000	5,000
50,000 to 100,000	4,000
25,000 to 50,000	3,500
10,000 to 25,000	3,000
Less than 10,000	2,500

The minimum salaries of qualified chiefs of divisions in municipal heath departments should be approximately three-fifths of the above scale.

Cost of Police Work in Cities of New York State

THE increasing need for regulation of traffic has caused another jump this year in the cost of police protection in the cities of New York State, according to information gathered by the Mayors' Conference Bureau of Municipal Information. The 1922 increase in police appropriations, however, according to the Bureau's figures, is less than it has been in any year since 1916.

The average yearly increase from 1916 to 1921, inclusive, was 12 per cent, while the total appropriation for police departments in all cities in the state is only 7 per cent greater this year than it was in 1921. A total of $37,148,844 has been appropriated by the 59 cities for police protection this year. The total appropriation in 1921 was $2,356,518 less. In 1916 the cities appropriated only $21,464,617.

An analysis of the figures received shows that this year's increase in the cost of police protection can be directly chargeable to the automobile. Thirteen cities have reduced the cost of their police departments this year. These decreases range from 1 per cent to 23 per cent. In eight other cities the appropriations for 1921 and this year were practically the same. The increases in the other cities range from 1 per cent to 134 per cent.

Reports received from the cities whose police appropriations have increased more than 5 per cent this year bring to light the fact that the regulation of the increasing urban traffic has made it necessary to enlarge police forces and therefore raise their appropriations. Prohibition enforcement has involved a much smaller increased cost than was anticipated.

Consolidated Schools in Iowa

By Forest C. Ensign, Ph.D.

State University of Iowa

AN educational movement of great significance, amounting to little less than a social revolution, is sweeping the state of Iowa from the eastern counties along the Mississippi to the Missouri River on the west. The people of the farms and villages are learning how to cooperate for the more effective education of their children. The little white schoolhouse, set checkerboard fashion at two-mile intervals along the section lines, is no longer regarded as the symbol of intellectual freedom. The consolidation of the time-honored and ineffectual districts into relatively large administrative units is the order of the new day. In another generation the single-room school will disappear, along with the prim little country schoolma'am and her overlord, the director, monarch of his kingdom two miles square. Outside the larger urban centers the educational unit will be the consolidated school, embracing a territory equivalent to ten, fifteen, or twenty of the traditional country districts.

In the early years of consolidation there was bitter opposition to practically every project attempted. The friends of the movement carried forward very definite campaigns in which the advantages of the larger district were emphasized. The opponents of consolidation, on the other hand, inaugurated counter-campaigns, emphasizing the expense and the impracticability of the proposed program. It was pointed out that during a large part of the year the public highways were almost impassable. The long journeys required morning and evening were shown to be dangerous to the health and morals of the innocent children. The diverse interests of country and town were painted in lurid colors. Even after consolidation had been voted, litigation sometimes blocked organization for years, and in at least one case a building, erected and practically ready for occupancy, stood empty for half a decade while neighbors wrestled with each other in the courts concerning some obscure point in the law. Under these conditions progress was painfully slow, there being at the opening of the year 1913 only seventeen consolidated districts in the entire state.

The outstanding figure in the battle for consolidated schools is former State Superintendent of Public Instruction A. M. Deyoe, who came to the head of the school

EARLHAM CONSOLIDATED SCHOOL, A TYPE OF THE MODERN BUILDINGS THAT ARE RAPIDLY INCREASING IN IOWA system in the year 1911, and served until July 1, 1919. Early in his administration, legislation was secured which made it relatively simple for districts to consolidate. Mr. Deyoe entered vigorously into a campaign for consolidation, utilizing various forces which were developing or emphasizing the wonderful agricultural resources of the state. Organization was proceeding rapidly when, in 1917, a group of legislators who still believed in the desirability of the one-room country school close to the door of every farmer, succeeded in so modifying the law as to make it exceedingly difficult to wipe out the old district boundary lines. The war, no doubt, was instrumental in checking the progress of consolidation, and for two years the reactionary forces were in control. In the year 1919 the process of consolidation was again simplified, and again, under the guidance of Superintendent Deyoe's successor, Hon. P. E. McClenahan, the process of reorganization went rapidly forward. At present, there are within the state more than 400 consolidated districts enrolling approximately 45,000 pupils.

Typical Country and Village Schools

Several of the newer consolidated schools are in the open country, and here the plant usually includes a modern school building, a superintendent's home, a teacherage, with rooms for the janitor and his family, experimental gardens, and stables or garage. But by far the larger number of these schools are found in villages, a few being in county-seat towns, the social and market centers of their respective communities. Whether in town or country, the program of study is much the same—the expression of an earnest attempt to serve the needs of a mixed community. Usually there is found the eight-year elementary school, two grades to a teacher in the smaller centers, crowned with a well-organized four-year high school. Occasionally the six-six plan of organization is followed, the high school including grades seven to twelve. All these schools are, of course, coeducational, and it is the ambition of every community that its boys and girls may, if they so elect, pass directly from the local school to college or state university; so algebra, geometry, history, foreign language, and science hold their place in the program, even as in the city schools. But in equal scholastic dignity will be found practical courses in agriculture, home economics, manual arts, and elementary farm and automobile engineering.

Many of the more recently constructed buildings are models in school architecture—plain, dignified structures, with simple, artistic lines. Built for service, they seem to embody something of the solidity of the character of the people of Iowa. Here, in classroom and laboratory, gymnasium and shop, library and music room, are found the most approved means of modern education. Usually the domestic science department is extensive enough to provide substantial refreshment for a community gathering. The gymnasium is supplemented by dressing-rooms with shower-baths and all modern accessories. In a few schools there are rooms "on the girls' side" for the school nurse. There is always an auditorium—sometimes the gymnasium may be converted to this use—capable of seating several hundred people, with a stage, often rather elaborately fitted up for amateur theatricals. In the newer schools, provision is made for moving pictures. Lighting, heating, ventilating, and water systems are always provided, and frequently are of the most approved type.

Each school, in order to receive the rather meager state aid offered—$750 per year—must have grounds of at least five acres in extent. A part of this space is given over to gardens and plots for agricultural experimentation, but there is always room for athletic grounds, with space for flowers and ornamental shrubs. Some of the grounds are bare enough, with little evidence of any esthetic strivings, but as a rule plantings are under way, and in a few years the entire establishment, within and without, will set a standard for beauty and sanitation in the neighborhood.

The Transportation and Taxation Problems

For years, the problem of transportation was a serious one, as will be appreciated by those who have motored across Iowa in the muddy season. Yet with only a few miles of hard-surfaced roads within the state, more than 40,000 children are carried by gasoline and horse-power from home to school and back each school day, with only rarely a breakdown or serious delay. Indeed, the percentage of attendance to enrollment is not infrequently higher than in the cities, and incomparably higher than in the single-room schools of the unconsolidated districts.

It is not to be supposed that this change in educational standards and opportunities is accomplished at slight expense. Taxes for school purposes have been greatly increased in the consolidated districts, yet compared with school taxes in the typical urban district they seem low indeed. As a matter of fact, the Iowa farmer has never paid excessive school taxes, the levy in many rural districts never being above 15 mills, and this upon an assessed land valuation of $50 or $60 per acre, possibly 20 per cent of its real value. The taxing capacity of some of the larger consolidated districts is such as to render easily possible the finest school system in the world, with excellent roadways connecting every home with the schools. To illustrate, a district 6 miles square has, in its farm lands alone, at $300 per acre—not a high valuation—resources amounting to nearly $7,000,000. When it is recalled that many districts are larger than this, some being twice as large, the possibilities for educational development appear almost limitless.

A BUS LOAD OF CHILDREN ON THEIR WAY TO A CONSOLIDATED SCHOOL

Gains and Setbacks

Consolidation was slow in gaining headway in conservative Iowa. Several of the states to the eastward—Indiana and Ohio for example—have made far more rapid progress. But everywhere the general character of the movement has been the same. No sooner had the early settlers provided for their primitive homes than they set up the community, or district, school. As in New England, this neighborhood institution, within view from the door of most of the houses, came to be regarded as a chief bulwark of society, an expression of American independence and freedom. As in New England, the more far-sighted saw the limitations of this primitive organization, and sought to replace it by one more efficient. But neither those who set up these little independent educational units, nor their sons, could see that through a somewhat larger neighborliness, involving the sacrifice of "the schoolhouse down at the corners," their children might come into a more generous inheritance. Alas, that these noble founders of new states had first to die, in order that the unwarranted traditions as to the excellence of the old-fashioned rural school might no longer block the progress of a new generation!

To one familiar with the pitifully inadequate rural school so generally prevailing throughout the Middle West, the movement towards consolidation is most inspiring. But the process has again been checked. The Iowa farmer, though solvent and able to weather the financial gale, has been dealt a cruel blow. The drop from $2 to 50 cents for a bushel of his chief crop, Indian corn, is not to be lightly borne. There is a demand for a reduction in taxes. Schools have suffered slightly, already. Building has almost ceased, and only an occasional community has the present courage to vote new burdens upon itself in the form of the more expensive educational organization. In a few instances communities have voted to return to the old, inefficient district school.

Yet at this writing the situation is not discouraging. Farm business is adjusting itself to a new level. The problems of school finance are being faced hopefully, and with fair promise of solution. Within one month three or four consolidated school buildings were dedicated, and contracts let for the construction of as many more. Presently the more progressive groups in the unconsolidated territory will again open a campaign for better schools, and the movement will be under way once more. Left to voluntary action, however, hundreds, perhaps thousands of wretched little schools would persist for a century. The less progressive districts will act only under the spur of coercion. Doubtless that will be a relatively early step. When a few more counties have consolidated a fair proportion of their territory, a general compulsory consolidation law will be enacted, and instead of twelve thousand inadequate, unsupervised, poverty-bound schools for the children of our great farming population, we shall have as many hundred, and these well-organized, efficient schools, serving broadly and expertly the interests of large and wealthy districts. When that time come, we shall have real rural education.

Whiting's Memorial Community House

By A. J. Parkin
Manager, Whiting Community Service

In the Memorial Community House now under construction at Whiting, Ind., we find an outstanding example of the useful type of memorial, a gathering-place for all the people, where they may perpetuate among the living those high American principles protected and saved by the men in khaki and blue, and a noteworthy investment in citizenship certain to bring large returns to the entire community.

When completed in the summer of 1923, this Community House will represent an expenditure of $500,000, of which $350,000 has been donated by the Standard Oil Company (Indiana) and $150,000 by John D. Rockefeller and his son, John D. Rockefeller, Jr. The building is a gift to the people of Whiting and will be controlled, maintained and used by them as a social and recreational headquarters through their own organization, Community Service.

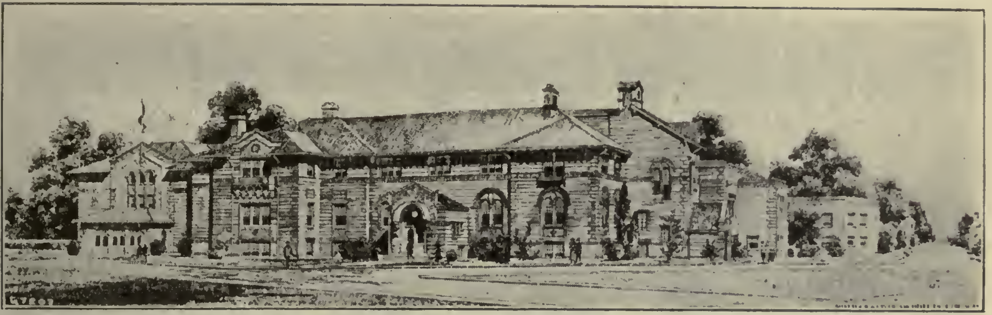
The entire building is one of quiet and commanding dignity, inviting in its simplicity and unconventional contour. The gentle slope of the Spanish tile roof surmounts the walls of rough-texture brick in varying shades of red, laid with cream-colored mortar joints. The architecture is an adaptation of the Southern Italian style, which lends itself to this type of construction, almost entirely brick, with the use of limestone at the various entrances and for trimming.

The building has three main divisions, so arranged as to accommodate the wide range of leisure-time activities in the Community Service program. The large auditorium at the southeast end of the building, shown at the left of the accompanying picture, has a seating capacity of one thousand, a stage fully equipped with the necessary dressing-rooms, lighting, scenery, and other facilities for dramatics, musical entertainments, lectures, motion pictures, etc.

The men's department, located in the central portion of the building, is reached by way of the main entrance. Entering here, one finds the spacious and inviting general lobby, with administration offices and secretary's counter at the opposite end. Adjacent to the lobby are the billiard-room, social and reading-rooms and refreshment lobby. Wide corridors leading from the general lobby afford easy access to the spectators' gallery of the swimming pool, the men's gymnasium, and also to the women's department, when such is desired.

Below the men's department are the locker and shower rooms, eight regulation bowling-alleys, a dining-hall with seating capacity of three hundred, and the boys' department.. Above, on the second floor, is perhaps the most beautiful room in the building, the Memorial Hall, with appropriate mural decorations, trophy cases, etc., and adjacent rooms to be used as headquarters of the American Legion.

The main entrance to the women's de-



Courtesy of Shattuck & Layer

THE "LIBERTY BUILDING" IN WHITING, IND.

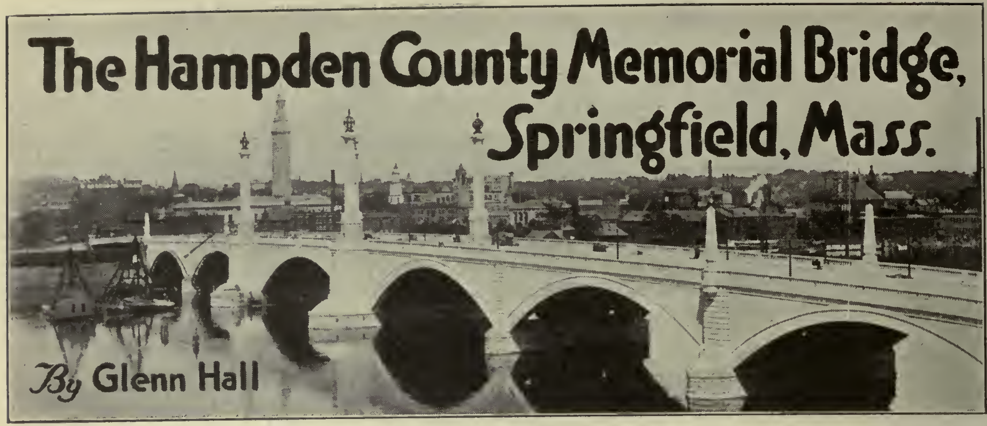
partment is at the north end of the building, shown at the right of the picture. Here will be found every facility essential to carrying forward a constructive recreational program for women and girls, including separate gymnasium, locker and shower rooms, swimming pool, game rooms, women's parlor and large club room for the use of the various women's organizations in the city.

The building will be dedicated to the memory of those who served our country in the World War. A grander monument by far than the artist's best in shaft of granite or tablet of bronze, this memorial will not only honor the dead, but stand as a most practical means of inspiration to the living. Here, in this people's house of play, friendship and neighborliness, men may mingle with their fellows as they make themselves better fit, physically and mentally, for the tasks of higher citizenship and service in the community. This is the goal of community Service, nationally and locally, the bringing of people together irrespective of race, color or creed, to participate in those leisure-time activities which make strong men and women.

PUBLIC RECREATION STIRS THE MELTING POT IN ST. LOUIS

The Hampden County Memorial Bridge, Springfield, Mass.

By Glenn Hall



THE dedication of the new Hampden County Memorial Bridge over the Connecticut River at Springfield, Mass., on August 4, is another important feature of Springfield's record of civic achievement. The new bridge, with its graceful arches and columnar towers, is in perfect harmony with the stately beauty of Springfield's noted civic center with its distinctive campanile.

The length of the bridge proper is 1,180 feet, which, with 314 feet for the railroad viaduct, makes a total of 1,494 feet. The total width is 80 feet. There are two 10-foot sidewalks on each side, with a 60-foot roadway. Two street car tracks are provided. There are seven reinforced concrete arch-ribbed spans. The piers supporting the spans are faced with granite. The parabolic curves of the spans give great beauty to the lines of the structure. The channel span has a clearance of 46 feet above the river. The maximum grade on the approaches is 3½ per cent. The fifteen tracks of the New York, New Haven and Hartford Railroad under the bridge approach on the easterly or Springfield end were lowered 4 feet in order to secure an easy gradient on the bridge.

The total cost of the bridge is about $6,000,000. Of this amount, $3,250,000 was spent on bridge construction proper. The balance is for the approaches, property damages, engineering, etc. Construction work on the bridge was started by the contractors, H. P. Converse & Company, in the summer of 1920. Fay, Spofford and Thorndike, of Boston, were the designing and supervising engineers. Edward H. Hoyt, of the firm of Haven and Hoyt, was the advisory architect. The cost of the bridge was borne by the towns and cities of Hampden County.

Now that the handsome bridge is completed, the necessity of giving it a proper setting is more apparent than ever. The railroad tracks on the river bank mar not only the beauty of the bridge, but also detract from the appearance of the municipal group. Factories, shacks and dumps along the river right in the heart of Springfield's business section add to the unsightliness. That Springfield is now awake to necessity was shown by the interest manifested by the city authorities in the discussion of water-front improvement at the National City Planning Conference in Springfield last June.

Street Lighting Costs in New York State

Of all the cities and villages of over 5,000 population in New York State, only one expends over $2.50 per capita for street lighting; three expend between $2 and $2.50; five between $1.50 and $2; and 24 between $1 and $1.50. Others are below $1. The best-lighted cities both in New York State and in the entire United States are now paying from $1.50 to $2 per capita for street lighting.

—A. F. DICKERSON.

Forward Steps in Municipal Affairs

Mayors

Mayor Keeps Evening Office Hours

New Bedford, Mass.—To receive citizens who do not have the opportunity to get to the City Hall during ordinary office hours, the Mayor of New Bedford on September 12 resumed his weekly evening office hours on Tuesdays from 7:30 P. M. to 9 P. M. We have found that this evening period is much appreciated by many citizens whose business does not permit them much time during the day and who wish to discuss civic problems with their chief executive. If some unforeseen engagement interferes with the Mayor's business on Tuesday, the Mayor's secretary or a confidential stenographer is present to see that the persons who have business with the Mayor have the opportunity of presenting their cases in such a way as to have them brought to his attention at the earliest possible moment.

The plan is working admirably, and we believe it brings the office of the chief executive closer to the people.

WALTER H. B. REMINGTON,
Mayor.

City Managers

Big Forward Steps in Pasadena

Pasadena, Calif.—On April 11 the people of Pasadena voted bonds for the following projects:

Water-works and protection	$175,000
Sewage disposal works and outfall sewers	412,000
Isolation hospital	12,000
Comfort stations	25,000
Street openings	825,000
Fire alarm system and Fire Department buildings	117,000
	$1,566,000

On August 29 they voted favorably upon the issuance of an additional $200,000 of bonds for park improvements, channel work and additional plunge facilities in connection with the Arroyo Seco Park.

Work is well under way in connection with the paving of Colorado Street, our main thoroughfare, for a distance of a mile, with 7-inch concrete with a 2-inch wearing surface. All underground work is being done in advance of paving. It is estimated that the cost of this improvement will be about $175,000,000. Proceedings have been started for the paving of Raymond Avenue for a distance of 1½ miles with 6-inch concrete, at an estimated cost of $220,000, all underground work to be put in in advance of paving.

A sewer system is being installed in the northeast section of the city, which was recently annexed, at an estimated cost of $42,790. Work is also being done on a sewer and bridge connecting San Rafael Heights, this section also being a recent addition to Pasadena. This sewer and bridge will probably cost in the neighborhood of $106,000. Progress is being made in the opening up of the Arroyo Seco scenic drive, and the installation of a sewer system in adjacent newly annexed territory, including Linda Vista.

Progress is being made in the work of appraising property which will be taken in the widening and opening of two streets across Pasadena to relieve congestion—Walnut and Green Streets, for which bonds in the amount of $825,000 were voted. Various other street openings are being made in different parts of the city, and various residential streets are being paved. During 1921-22 over 2½ miles of street have been improved and over 4,051 lineal feet of grading done; also over 25,997 square feet of gutter, 12,135 lineal feet of curb, and 81,198 square feet of sidewalk laid.

The Light & Power Department during

the last fiscal year spent on construction work $210,000: over $104,000 for general construction work; $68,000 for the Lamanda park system, purchased from the Edison Company; and $38,000 for a new boiler.

We have under way the installation of a fire alarm system which, when completed, will cover the entire city and be most modern in every respect. A central fire station, in a Class "A" building, is being erected in the center of the city, consolidating two existing fire stations. The fire alarm system and new central fire station together will cost approximately $157,000.

The city of Pasadena, in conjunction with the cities of South Pasadena and Alhambra, is building an activated sludge plant for the treatment of its sewage, a full description of which will appear in an early issue of The American City.

Public-spirited citizens have presented to the city a wonderful thirteen-acre garden spot, which will be known as "Carmelita Gardens" and will be used for park purposes and as a site for an art museum or institute. The value of this gift is $210,000.

Pasadena's activities also included the passage of a zoning ordinance, the forming of a City Planning Board, and the employment of a city planner for devising a plan for the development of the city as a whole.

The city closed last year's activities with $255,996.09 in the General Fund as against a balance for the corresponding period last year of $172,254.06. This is an increase of $83,742.03, showing that Pasadena lives within its income.

C. W. KOINER,
City Manager.

Public Safety Departments

Instructing Children in Municipal Affairs

Oak Park, Ill.—As a feature of Safety Week, observed in Oak Park, October 8-14, a school of instruction in municipal affairs, for eighth-grade children, was conducted in the Municipal Building. Sessions were held in the Council Chamber at 10:30 and 2:30 each day, a different eighth-grade class attending each session. Heads of the various departments addressed the children, telling them about the work of their particular departments and how children could be of use in the conducting of municipal affairs.

After the class of instruction, the children were taken through the building, visiting the different departments, where the work being carried on was explained to them. The visits covered the Public Works Department, Tax Collector's Office, Police and Fire Departments, municipal garage, and incinerator.

Before this week of instruction, it was found that 90 per cent of the children in the schools had never been in the Municipal Building and knew very little of how the village affairs were handled. It is the intention to make this course of instruction a yearly event. About two thousand children received the instruction.

Another feature of the local safety program is a public safety essay contest in the schools, in which the Oak Park Safety Commission will award buttons to the writers of the best essays.

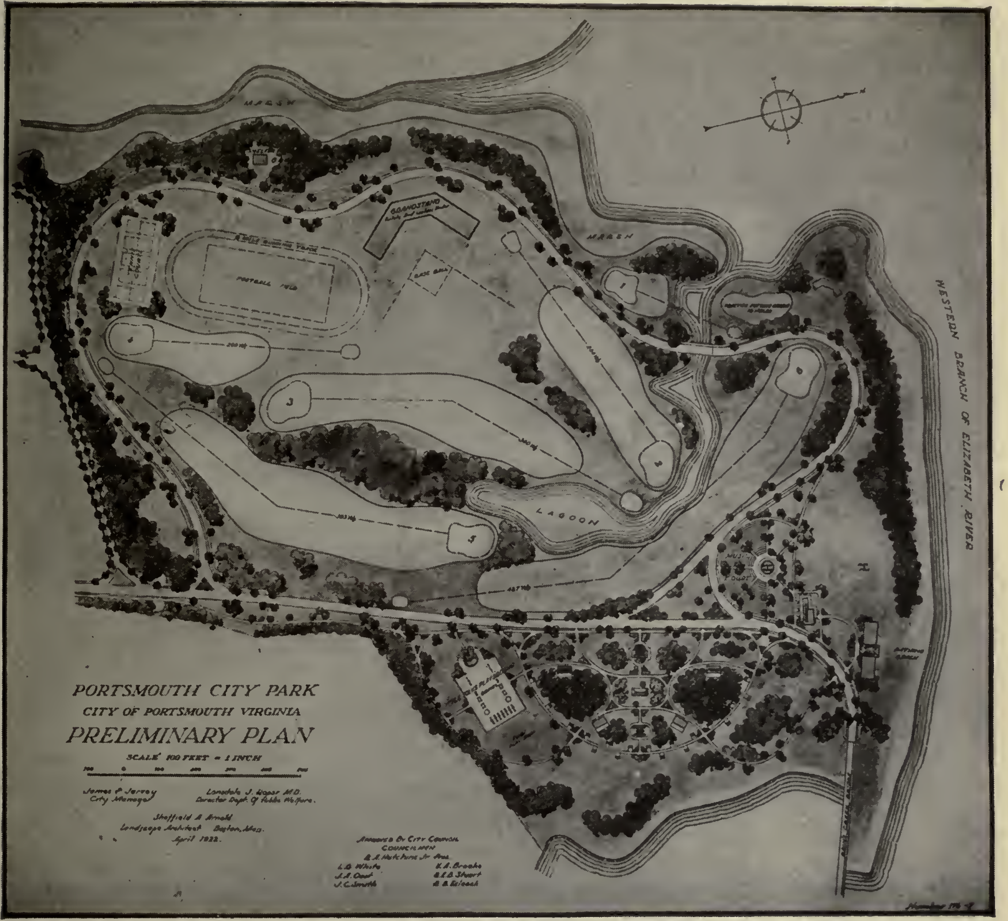
DUDLEY C. MEYERS,
Assistant Secretary, Safety Commission.

Public Welfare Departments

A Picturesque Recreation Park for a Virginia City

Portsmouth, Va.—This city is about to undertake the development of a new city park. A little over a year ago a tract of land with an area of approximately 100 acres was acquired, and Sheffield A. Arnold, landscape architect, of Boston, was retained to prepare complete plans for the development of the tract as a city park. The property acquired is located in a fertile farming section, about fifteen minutes' ride by trolley from the heart of the city. It is unusually well adapted for park purposes, because of its topography and picturesque location on the shore of the western branch of the Elizabeth River; the water practically borders the park area on three sides.

The park plans as designed embrace many interesting features. A little brook running through the property will be widened and deepened until it assumes the



dignity of a lagoon. There are many fine existing trees, and a large number of ornamental trees and shrubs will be planted to further beautify the park. A complete athletic field has been provided, including baseball, football, tennis courts, quarter-mile running-track, and general field courts. Portsmouth has but few golf courses, and for this reason one has been provided for in the park, and because of natural hazards and picturesque conditions the course, while a short one, will be especially good.

Other features include a large music court with band-stand, located near the main entrance to the park; zoological gardens, where it is planned to have a large assortment of animals; a little folks' playground, where there will be a wading pool and play apparatus of every sort; and a picnic grove among the pine trees, with ample provisions for shelter and recreation.

LONSDALE J. ROPER, M.D.,
Director of Public Welfare.

City Planning Commissions

Building-Line Maps a Part of Akron's Zoning Ordinance

Akron, Ohio.—The zoning ordinance recently adopted by the City Council of Akron is the result of two years' work of the City Planning Commission, with Charles F. Fisher as planning engineer. This included preparing the plan, presenting it to civic and neighborhood organizations, and acting upon suggested changes. When finally submitted to the Council, the ordinance had the support of the various civic organizations of the city. At the public hearing only one person presented a criticism, and absolutely no opposition appeared when it came up for passage.

The six Use, five Height and five Area classes of districts are all shown on one set of maps consisting of twelve sheets drawn to a scale of 400 feet to 1 inch.

The method of providing for front yards, by determining building lines for the frontage along every residence street and showing these lines definitely on a second set of maps as a part of the ordinance, is a new or an unusual feature. It entailed an immense amount of work, but for a special reason this method seemed advisable. Early in 1919 the Council had passed a series of ordinances providing for building lines on some ten important thoroughfares. Buildings to the value of about $6,000,000 which had been erected or were in course of construction had observed these setbacks. To reinforce the power under the existing ordinances for building lines on these streets, it was determined to work out building lines on a comprehensive plan. This method will be more convenient for the building inspector in granting permits as well as for property owners and purchasers who desire to know the building line along any street frontage. It also permitted the establishment of building lines in small business districts created in residence sections where there are no existing buildings or where they set back from the street line.

The ordinance includes provisions for a zoning board of appeals, amendments or changes after public notice and hearing, and other usual features.

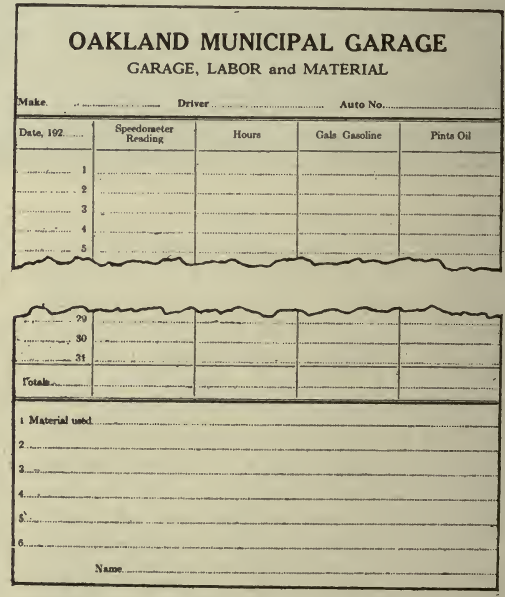
Public Works Departments

Oil and Gasoline Station at Municipal Garage

Oakland, Calif.—This city operates a municipal garage and, in connection with it, a repair shop where all the automobiles used by the various city departments are maintained and repaired.

Gasoline for the cars is bought in open market and stored in two underground tanks with a combined capacity of 560 gallons. There is a special oil station, shown in the accompanying photograph, which is provided with a gasoline pump on each side of the building, by means of which gasoline can be supplied to two automobiles simultaneously, thus avoiding delay. Lubricating oil is stored in tanks which are provided with self-measuring pumps. The oil is delivered in bulk or in barrels and is pumped into the storage tanks.

MUNICIPAL GARAGE, OAKLAND, CALIF.



OAKLAND MUNICIPAL GARAGE

GARAGE, LABOR and MATERIAL

Make. Driver Auto No.

Date, 192	Speedometer Reading	Hours	Gals Gasoline	Pints Oil
1				
2				
3				
4				
5				
29				
30				
31				
Totals				

1 Material used

2

3

4

5

6

Name

CARD FOR RECORD OF TIRE MILEAGE, AND OF MATERIAL USED

The hostlers check the gas and oil given each car daily, using a card system on which is entered the name and number of the car and the name of the driver. Speedometer readings are taken twice a month for the purpose of keeping record of tire mileage and gasoline and oil consumption.

J. C. READY,
Superintendent, Municipal Garage.

Recreation Departments

The Skating-Rinks in Flint

FLINT, MICH.—Ice skating has been strongly developed by the Flint Park Board in its endeavor to furnish the people outdoor recreation in winter, by the construction of artificial skating rinks and supervision of the natural rinks. The 6,000 attendance at Athletic Park alone in one day shows the degree of popularity of this king of winter sports. Beside the rink in Athletic Park there were three other artificial rinks, in Dort School Park, the Kearsley Park Tennis Courts, and on Court Street, and the natural rink, Thread Lake, all crowded to capacity during the skating periods. The demand for more skating areas comes constantly to the attention of the Park Board from different sections of the city, so that the Board has planned to develop several additional rinks in the near future.

The skating season generally opens about Christmas Day and lasts until the latter part of February, though these limits vary greatly in different years, some seasons opening as early as December 1. From two to five weeks each winter is the average length of the skating period in this locality.

Athletic Park, located in the heart of the city, has been equipped with a hot-water-heated dressing-room underneath the grand stand. The concrete floor is covered with two-inch plank to protect the skates. Another large room was built next to this one for checking skaters' extra paraphernalia. There is no charge made by the Park Board for skating or any of the privileges. Three 500-watt flood-lights play directly on the rink from the top of the grand stand, making the night skating attractive. The skating area of Athletic Park is a little larger than the average football field. One caretaker and two helpers are kept at this park during the ice-making period.

Thread Lake, with an area of about 120 acres, affords the earliest skating, and this season it has been exceptionally smooth and very popular. Here also is a heated dressing-room in the basement of the swimming pool. Electric lights have been placed near the edge of the lake for night skaters. The Park Board maintains one caretaker here on a weekly salary during the skating period.

The Dort Park rink is located on one of the main arteries of the city, several blocks out from the main part of town and near a very dense factory population. The demand at this location justifies the plans of the Park Board to build another rink a few blocks from this one.

The tennis courts at Kearsley Park, an inclosed area of 300 by 120 feet with a perfect surface, have afforded excellent skating, and another year it is expected to make this rink especially adapted to fancy skating. Electric lights will be strung around to afford light for night skating.

The Court Street rink, a low spot near the center of the city, serves a large population, and though the ice-making here was late in getting under way this year, the rink has been very well attended, especially by children.

The ice on the artificial rinks is made by spraying a thin sheet of water evenly over the ground after it is well frosted. After the first few sprayings are frozen very hard, they are made more frequent, depending on the temperature. At a temperature of 10 above zero or lower the water will freeze immediately, so that the spraying may be made continuous. At 20 degrees above, about a one-hour interval is necessary between coats. The danger of getting shell ice must be watched closely. This shell ice is due to putting too much water on at one time. A thin top sheet of ice is formed, leaving an air-pocket underneath. If too much water is put on the ground at first, the excess will bring the frost out of the ground, and the water will soak into it instead of freezing in a sheet on top.

From two to three inches of ice is sufficient for good skating. Each night the surface is scraped of all snow made by the skates, and new layers of ice are made, giving a perfect surface for the next day.

A 1½-inch hose with a ¾-inch reducing nozzle to produce spray has proved very satisfactory. The water-main connection is made in the center of the area. A furrow is plowed around the edge to hold the excess water from running off the rink, and to give a definite boundary.

It is the idea of the Park Board to stimulate curling, ice hockey and fancy skating by making suitable courts for games and encouraging contests. The demand justifies the expense.

GEORGE F. McKINLEY,
Park Superintendent.

Police Departments

Roping Back Crowds During Parades

San Francisco, Calif.—Most of the parades in San Francisco take as their route Market Street, from the Ferry Building to the City Hall. To confine the crowds to the sidewalks during parades, the Police Department has adopted the plan of stretching a strong steel cable along the street near the curb. It is supported at regular intervals by heavy wooden posts, which are set into holes in the roadway pavement, about a foot out from the curb. To protect the edge of the hole and to hold the post firmly, a flanged iron collar is set into the top of the block. An iron cover similar to the cover of a small water-works valve box is kept on each hole when the posts are not in place.

At street intersections the rope is laid in the adjacent gutter until a few minutes before the approach of the parade, when it is drawn across the intersecting roadway by the policeman in charge of each intersection. Police Department wagons follow up the parade, the posts are loaded into them, and the rope is wound up on drums, the entire equipment being stored in the basement of the Hall of Justice.

DANIEL J. O'BRIEN,
Chief of Police.

Distribution of Population, 1920 Census

To meet requests for information as to the number of municipalities of various sizes in the United States, the accompanying table is reproduced from the volume issued by the Bureau of the Census on "Number and Distribution of Inhabitants."

As previously noted in The American City, the census shows that 51.4 per cent of the total population of the United States in 1920 was urban, the Census Bureau classifying as urban population that residing in cities and other incorporated places having 2,500 inhabitants or more, and in towns of that size in Massachusetts, New Hampshire and Rhode Island.

Of the 2,787 urban places as thus defined, 68 have a population of 100,000 or more; 219 have from 25,000 to 100,000; 1,180 have from 5,000 to 25,000; and 1,320 have from 2,500 to 5,000 inhabitants.

Another tabulation of the Census Bureau shows that the population of places having 8,000 inhabitants or more in the United States has increased during the last hundred years from 4.9 per cent of the total population in 1820 to 22.7 per cent in 1880; 32.9 per cent in 1900; and 43.8 per cent in 1920.

CLASS OF PLACES	1920		1910		1900		1890		PER CENT OF TOTAL POPULATION			
	Number of places.	Population.	Number of places.	Population.	Number of places.	Population.	Number of places.	Population.	1920	1910	1900	1890
Total population of the United States	....	105,710,620	....	91,972,266	....	75,994,575	....	62,947,714	100.0	100.0	100.0	100.0
Urban territory	[1] 2,787	54,304,603	[1] 2,313	42,166,120	[1] 1,801	30,380,433	[1] 1,417	22,298,359	51.4	45.8	40.0	35.4
Places of 1,000,000 or more	3	10,145,532	3	8,501,174	3	6,429,474	3	3,662,115	9.6	9.2	8.5	5.8
Places of 500,000 to 1,000,000	9	6,223,769	5	3,010,667	3	1,645,087	1	806,343	5.9	3.3	2.2	1.3
Places of 250,000 to 500,000	13	4,540,838	11	3,949,839	9	2,861,296	7	2,447,608	4.3	4.3	3.8	3.9
Places of 100,000 to 250,000	43	6,519,187	31	4,840,458	23	3,272,490	17	2,781,894	6.2	5.3	4.3	4.4
Places of 50,000 to 100,000	76	5,265,747	59	4,178,915	40	2,709,338	30	2,022,822	5.0	4.5	3.6	3.2
Places of 25,000 to 50,000	143	5,075,041	119	4,026,045	82	2,800,627	66	2,268,786	4.8	4.4	3.7	3.6
Places of 10,000 to 25,000	459	6,942,742	367	5,524,434	280	4,338,250	228	3,429,247	6.6	6.0	5.7	5.4
Places of 5,000 to 10,000	721	4,997,794	612	4,254,856	468	3,220,766	339	2,372,717	4.7	4.6	4.2	3.8
Places of 2,500 to 5,000	1,320	4,593,953	1,106	3,879,732	893	3,103,105	726	2,506,827	4.3	4.2	4.1	4.0
Rural territory	....	51,406,017	....	49,806,146	....	45,614,142	....	40,649,355	48.6	54.2	60.0	64.6
Incorporated places of less than 2,500	[2] 12,905	8,969,241	11,833	8,169,149	8,930	6,301,533	[3] 6,490	4,757,974	8.5	8.9	8.3	7.6
Other rural territory	....	42,436,776	....	41,636,997	....	39,312,609	....	35,891,381	40.1	45.3	51.7	57.0

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[1] The total number of places of certain classes for the United States as a whole is less than the sum of the numbers shown for the individual states of the country, for the reason that each of three cities lies in two adjoining states, namely, Bristol (Virginia and Tennessee), Texarkana (Arkansas and Texas), and Union City (Indiana and Ohio), and is counted in each state. Moreover, one of these cities, Bristol, lies in two geographic divisions (South Atlantic and East South Central), and is counted in both. Each of these cities consists of two incorporated municipalities, but each is, from the statistical standpoint, one city and should be classed according to its total population. In each case that part of the population living in each state, whatever its number, is credited to the group of cities to which, according to its total population, the city belongs. Classed in this manner, Bristol fell in 1920 and 1910 in the class of cities having 10,000 to 25,000 inhabitants, and in 1900 and 1890 in the 5,000–10,000 class; Texarkana fell, in 1920, 1910, and 1900, in the 10,000–25,000 class, and in 1890 in the 5,000–10,000 class; and Union City fell at each census from 1890 to 1920 in the 2,500–5,000 class.

[2] Includes 48 places not returned separately.

[3] The number of incorporated places can not be exactly determined from the returns of the 1890 census, at which incorporated places were not distinguished from unincorporated ones, and very small places, whether incorporated or not, were not enumerated separately. It has been assumed that those places were incorporated in 1890 which were returned separately in that year and were returned in 1900 as incorporated. (See Reports of the Twelfth Census: 1900, Population, Vol. I, p. lviii.) The figures given for 1890 in this table for incorporated places having fewer than 2,500 inhabitants may, therefore, include the population of some unincorporated places and exclude that of some incorporated places.

Cincinnati's Life-Saving and Rescue Squad

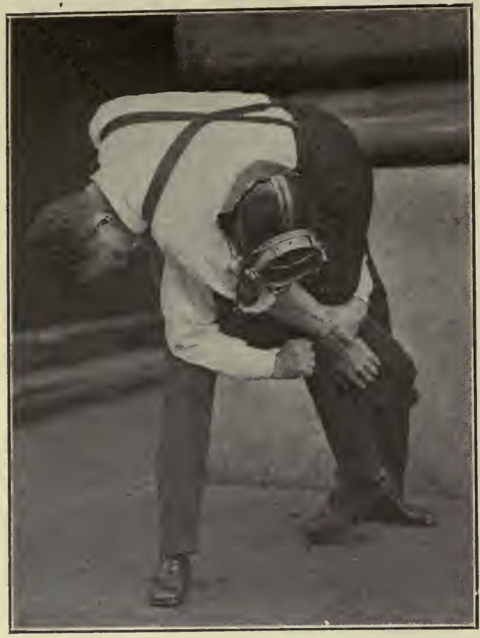
Fire Department Renders Great Service, Beyond Its Usual Functions, Through Special Squad

IN 1918, B. J. Houston, Chief of the Cincinnati Fire Department, organized a life-saving and rescue squad and secured a machine to carry it to the scenes of its duties. The squad has proved one of the most valuable divisions of the Department. It responds to all alarms in the greater down-town district of Cincinnati, as well as to many special calls for aid. It is in charge of Captain H. W. Geselbracht, who has given constant and special study to all methods of rescue and life-saving work. The Honorable Service Medal for Humanity has been awarded to the squad by the American Red Cross.

No man is assigned to the rescue squad until he has had at least five years' experience in the Department, and each one is thoroughly instructed in all recognized life-saving methods. The following equipment is carried:

1	gas shut-off key
100	feet ¾-inch hoisting rope
2	No. 2 Barrett jacks
2	hydraulic jacks having a capacity for lifting from 30 to 40 tons each
1	leather bucket and sponges
3	gallon extinguishers
1	J & M extinguisher
1	lift gun with 250 feet of ¾-inch rope and canister kept ready for immediate use
1	portable telephone
2	Lungmotors
1	Vajen helmet
3	Draeger helmets, oxygen self-contained, an extra equipment of three extra cylinders, and three potash cartridges
2	leather pillows for Lungmotors
2	wool blankets
1	50-gallon chemical tank
250	feet of 1-inch hose
1	Detroit door jamb
1	Cadet carbide search-light for use at fires or accidents, with an extra charge for same
3	pair water-proof pants for use when men must wade in acids or expose themselves to gases injurious to the skin
2	pair rubber gloves
1	acetylene steel-cutting torch, complete, consisting of a 50-foot length, with copper-covered hose, two gages, one for oxygen and one for gas, with one jet and four tips
1	oxygen tank of 50 cubic feet capacity
1	250-pound acetylene gas tank
1	hand-ax

THE RESCUE SQUAD AND ITS FULLY EQUIPPED MACHINE



USING THE CINCINNATI FIREMAN'S LIFT

1 4-inch stop block
1 Bresnan roof roller with tie-back line
2 100-foot lengths of ⅜-inch rope for signal in connection with use of helmet
1 25-foot rope ladder
1 complete kit of tools for machine with ratchet auto jack
1 25-foot Banger ladder

Special Tools

A special kit of tools includes a cross- and rip-saw, keyhole saws, hack saw and extra blades, Trimo wrench, 2-inch auger bit, 2-inch set chisel, ¾-inch double, single and snatch blocks with 160 feet of rope kept ready for immediate use, one jimmy, and one 12-inch copper stop box shoe-horn. Additional equipment includes one 12-foot shutter hook with ¼-inch spring steel hose clamp, one 12-pound sledge, two axes, two picks, two shovels, a heavy crowbar and a small hand crowbar, 21 feet of ½-inch galvanized pipe, and grappling hook for cistern and vaults, two 20-foot lengths of ¼-inch rope for floats to be attached to grappling hooks when used in the river, one Larkin nozzle with assorted tips, one Grether flash-light (used when wearing helmets in dangerous gases), two Rayo lanterns for outside use, one electric Klaxon, three bathing suits, two Browder life-nets, one 3- to 1-inch reducer, one 3- to 2½-inch reducer, and one 2½- to 1-inch reducer for use independent of engine companies.

The first-aid kit consists of absorbent lint bandages, gauze of all kinds, splints, one-fourth U. S. P. iodine, three tourniquets, carron-oil, picric acid gauze, aromatic spirits of ammonia, Pearson creolin, compress bandages, triangular bandages and towels, cotton, etc.

The machine which carries the squad and its equipment is an Ahrens-Fox model 16-849, weighing 12,700 pounds and equipped with 38- by 7-inch front tires and 40- by 8-inch rear tires. The machine is equipped with one clear-toned 12-inch nickel-plated bell on stanchions in a suitable position.

Special Fireman's Lift Used by Squad

Captain Geselbracht has evolved a special lift for the use of men wearing helmets. The lift has been recognized as original by Captain Klein, a special representative of the American Red Cross, and has been designated the Cincinnati Fireman's Lift, to distinguish it from the fireman's carry, which may be used only without the mask.

The Cincinnati fireman's lift is for use in handling a man who is entirely prostrate and unconscious. First, the rescuer, the fireman, wearing the helmet, puts the patient face downward on his stomach and then stands at the patient's head, looking at the patient's feet. The rescuer then catches hold of both shoulders of the patient and raises the latter to a kneeling position, keeping the body leaning forward so that there will be no bending at the hips. Holding the patient's body with the left hand, the rescuer, being somewhat to the left of and in front of the patient, drops to both knees and, grasping the left hand of the patient with his right hand, leans forward almost to the floor, at the same time bringing the patient's body face forward over his own back and helmet apparatus. When the patient's body is over the rescuer's back, the rescuer then grasps the left hand of the patient, leaving the right hand free. The rescuer then raises his body while still kneeling, until the patient is in balance, steps forward with the right foot, placing the right elbow on the right knee, and leans forward to a balance. The rescuer's left leg is then straightened and brought up alongside the right foot, when the load is ready to lift to a walking position. The lift is illustrated on page 526, showing the rescuer with the patient on his back, ready to straighten the left leg and bring it alongside the right one. From this description it is believed that many firemen who have not already heard of this lift, but who are familiar with rescue work, will be able to carry out this drill. The lift has proved very successful for use with helmets. It is the only one known of its kind.

Port Development in Progress at Richmond, California

By H. D. Chapman
City Engineer, Richmond, Calif.

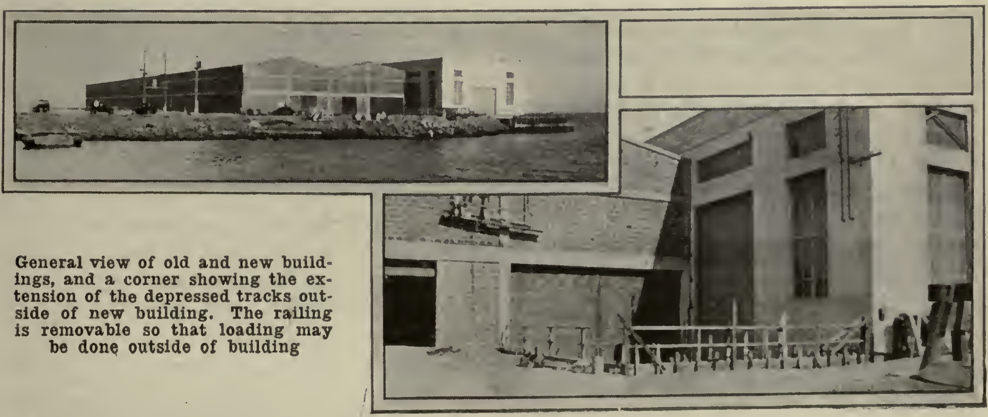
In 1912 Richmond, then a city of 12,000 inhabitants, bonded itself for the construction of a wharf and, in conjunction with the United States Government, the dredging of an outer and an inner harbor, connecting with deep water in San Francisco Bay. In 1920, it was found that more storage room was required for freight, and it was also decided to deepen and widen the existing channels, and redredge the basin in front of the wharf.

The dredging is now in progress, under the direction of Colonel Herbert Deakyne of the U. S. Engineers Office of San Francisco. The contract for the work was let to the United Dredging Company, at $0.084 per cubic yard. The cost of this work is to be borne by the United States and the city, the Government agreeing to put up an amount equal to that given by the city for the channel. The cost will be about $150,000 for the city and $100,000 for the Government.

The work in progress at this time consists of dredging a channel 300 feet in width, to a depth of 24 feet at low water, and extending about 2.6 miles through the tide-lands from deep water through the outer harbor past the wharf and through the inner harbor; the dredging of a basin directly in front of the wharf to a depth of 30 feet; the construction of a turning basin at the inshore end of the channel; and the construction of a training wall along the south side of the channel. The training wall is to be constructed of clay, excavated from the channel. Ultimately the channel will be 600 feet wide and 24 feet deep.

At the same time the dredging was decided upon, the Council ordered the City Engineer, in collaboration with the Building Inspector's Office, to prepare plans and specifications for a wharf shed. This was done, and the shed is now nearing completion.

The roof space of the new shed is 480 by 120 feet, and the floor space of the building is 480 by 90 feet, the remaining 30 feet in the width being taken up by depressed tracks lying between the old building and



General view of old and new buildings, and a corner showing the extension of the depressed tracks outside of new building. The railing is removable so that loading may be done outside of building the floor of the new building. The roof of the new building is attached to the wall of the old building, giving a covered trackage.

The new building is designed to store 12,000 marine tons. It is built on timber pile foundations, the piles being in clusters of three or four, driven through about 30 feet of dredged material and silt into the hard-pan. The piles are cut off at an elevation of 4 feet or at one foot below average high tide. The piles are spaced 10 inches center to center both ways, and are capped with reinforced concrete with reinforcements bent down over the piles. From the footings, reinforced concrete pillars support the floor, which is composed of 7 inches of concrete, reinforced with Clinton welded fabric; the main bands of the run for cement are 4 feet 3 inches wide and the secondary bands 3 feet 2 inches wide, all fabric being 2½ by 16 inches mesh and of No. 3 and No. 8 wire. The column heads are topped with a grill of five ½-inch square bars each way. Between columns over all main bands there is placed an additional reinforcement of four ⅜-inch bars.

The superstructure consists of a frame of reinforced concrete columns and beams, and panels of hollow tile. A line of columns runs down the center of the building, supporting the ends of the two steel trusses of 60-foot span each, which rest on the wall of the new building at one end and are attached to the existing wall at the other end. The clear height between floor and truss is 24 feet. The roof consists of 3-inch matched sheathing spiked to 4- by 12-inch timber purlins on 6-foot centers. The trusses are on 20-foot centers. The roof covering will consist of standard tar and gravel roofing.

Light is provided by twenty-two 6- by 20-feet skylights. Entrance to the building for trucks and for railroad cars is provided for by rolling steel doors. The doors over the railroad tracks are in two sections with a mullion between, so that single track openings may be used.

An electric car puller is to be installed at one end of the building, so that a locomotive need not enter the building. Railroad service is provided for by a spur from the A. T. & S. F. Railway.

The cost of the entire improvements—dredging and wharf shed—will be approximately:

Dredging:		
U. S. Government		$100,000
City of Richmond		150,000
Wharf shed—City of Richmond:		
Piling	$35,577	
Floor, etc.	45,917	
		81,494
Concrete columns	4,880	
Tile walls	5,274	
Retaining wall	675	
Steel	10,560	
Rolling doors	3,722	
Carpenter work	13,437	
Plumbing	396	
Skylights, etc.	3,149	
Roofing	4,145	
		46,238
Car puller	$3,500	
		3,500
		$131,232
Total cost to City of Richmond		$281,232

Legislation to Preserve the Beauty of Roads

In order that the roadsides may be made attractive and their beauty preserved, it is necessary that there be suitable legislation. The laws of Michigan are favorable to this work, forbidding the cutting or injury of roadside trees without the permission of the highway authorities, providing for the care and planting of trees along the state trunk lines and Federal Aid roads under trunk line and Federal Aid road maintenance, and providing the counties, townships, cities and villages their appropriate sums for this purpose. In the case of state trunk lines and Federal Aid roads, it is provided that the trees must be obtained from the State Agricultural College, from some other state institution, or from neighboring lands, without cost. This provision is working out as an advantage; it stimulates the cooperation of local organizations in supplying trees for this work and insures a healthy local interest.

Legislation of a somewhat similar nature has been enacted in California, Illinois, Maryland, Massachusetts, New Jersey, New York, Oregon, Pennsylvania and Washington, and other states. Although in some cases the legislation is so imperfect that no actual work can be done, it shows an effort to provide for this work, and undoubtedly before many years such provision will become general.

—Charles F. Boehler, Landscape Engineer, Michigan State Highway Department.

Hydrant Rentals and the Financing of Water-Main Extensions--Part II

Published in response to numerous requests for this information

State and City	Population	Ownership	No. of Services	Per Cent Metered	City Pays Hydrant Rental?	City Pays For Water Used?	Financing of Water-Main Extensions
NEW HAMPSHIRE							
Claremont	9,524	M	1,425	72	Yes	Yes	Income
Hanover	2,264	M	360	None	Yes	Yes	Bonding or borrowing
Jaffrey	2,303	M	440	None	Yes	Yes	Income
Meredith	1,638	M	300	33	Yes	Yes	Taxation
Milford	3,783	M	652	58	Yes	Yes	Income
Newmarket	3,181	M	500	100	Yes	No	Water-works
Portsmouth	13,569	M	3,350	100	No	Yes	Water department
Somersworth	6,688	M	1,051	50	Yes	Yes	City
Sunapee	1,071	M	300	None	No	No	Town
Wilton	1,490	M	327	90	Yes	Yes	Income
Wolfeboro	2,178	M	700	....	Yes	Yes	Earnings
NEW JERSEY							
Atlantic City	50,682	M	7,993	98	No	No	Bond issue
Belmar	1,433	M	1,500	70	Yes	No	Revenue
Bloomfield	22,011	M	5,000	20	No	No	Notes issued in December
Bridgeton	14,323	M	3,430	None	No	No	Appropriations
Camden	116,309	M	24,600	5	No	No	Issuing temporary improvement certificates
Dover	9,817	M	1,966	100	Yes	No	Property benefited pays 10% year cost of in lation; retired when water rents for such accrue therefrom
Englewood	11,627	P	2,500	100	Yes	Yes	Company. Customer pays annual guarantee
Haledon	3,435	M	700	85	$25 year	No	Water expense or notes or bonds
Hawthorne	5,135	M	1,200	90	Yes	No	Taxes
Hightstown	2,674	M	650	100	Yes	No	Bond issue
Jamesburg	2,671	P	301	30	Yes	Yes	Company
Lakewood	5,149	P	1,400	100	Yes	Yes	Require guarantee return in 5 years equal to cost of extension, covered by deposits
Mays Landing	1,359	M	248	100	No	No	Bonds
Medford	1,903	P	200	None	Yes	No	
Milltown	......	M	582	100	No	No	Bond issue
Newark	415,609	M	50,092	93	No	Yes	Bonds and revenue
Ramsey	1,667	M	270	100	Yes	No	Improvement certificates
Ridgewood, etc.	......	M	2,500	2	Yes	Yes	Consumers guarantee of revenue
Sussex	1,212	M	400	5	$1,500 tax	No	None
Trenton	119,289	M	27,359	21	No	No	Revenue
Wallington	5,715	M	735	33	Yes	Yes	Income
West Orange	15,573	P	2,748	100	Yes	Yes	By the town on 5-year basis
Wrightstown	5,288	P	75	95	Yes	Yes	Borough
NEW MEXICO							
Alamogordo	2,363	M	650	100	City owns	....	
Carlsbad	1,736	P	504	98	Yes	No	Company
Gallup	3,920	M	950	90	No	No	Current receipts
Roswell	7,062	M	2,800	100	No	No	Profits
NEW YORK							
Bath	4,795	P	850	66	Yes	No	
Beacon	10,996	M	1,694	100	....	....	Income
Brockport	2,930	M	1,200	100	Yes	No	Income
Candor	2,624	M	170	95	No	No	Village
Canisteo	2,201	P	677	50	$15,000 lump sum	....	Company
Canton	2,631	M	700	None	Yes	No	Water rentals
Cape Vincent	1,102	M	400	1	Yes	No	Vote of people
Cazenovia	1,861	M	600	50	No	No	
Champlain	1,280	M	230	None	No	No	Water rents
Corning	15,820	M	3,263	100	Yes	Yes	Bond issue
East Aurora	3,703	M	1,100	100	No	No	Earnings and bond issues
East Syracuse	4,106	M	850	100	No	No	Water rent receipts
Elizabethtown	1,108	P	200	None	Yes	....	Surplus earnings
Elmira	45,305	M	10,800	100	Yes	Yes	Surplus earnings
Fairport	4,626	M	970	90	Yes	No	Tax and earnings
Fort Plain	2,747	M	750	6	Yes	No	General funds
Frankfort	4,198	M	900	90	No	No	Revenue
Fulton	13,043	M	3,000	98	No	No	Revenue
Geneseo	2,157	M	632	83.5	No	No	Surplus water rents
Glens Falls	16,638	M	3,750	1.1	No	No	Surplus or bond issue

State and City	Population	Ownership	No. of Services	Per Cent Metered	City Pays Hydrant Rental?	City Pays For Water Used?	Financing of Water-main Extensions
Gloversville....	22,075	M	4,551	100	No	No	Earnings
Hancock.......	1,329	P	225	None	Yes	No	Money received from water taken
Huntington....	3,500	P	1,550	90	Yes	Yes	Contracts with applicants who furnish the money
Jamestown.....	38,917	M	9,000	100	$12,000 for all	....	Earnings
Johnstown.....	10,908	M	2,964	6	No	No	Water rents
Kingston.......	26,688	M	6,000	3.3	No	No	Dept. revenue
Lake Placid....	2,099	M	500	15	No	No	Direct tax, 50-50% basis, and bond issues
Little Valley....	1,307	M	360	None	No	No	Service rental money
Lowville.......	3,127	M	912	98	No	No	Water-works funds
Marathon......	1,079	M	350	.4	No	No	Earnings
Middletown....	18,420	M	3,771	3	No	No	Earnings
Mohawk.......	2,919	M	700	50	Yes	No	Income
Mt. Morris.....	3,312	M	650	None	No	No	Vote of taxpayer, bonds
Mount Vernon..	42,726	P	6,350	100	Yes	Yes	Bonds
Newburgh.....	30,272	M	5,000	6.5	No	No	Bond issue
New Rochelle...	36,213	P	9,350	100	....	....	
New York......	5,621,151	M	411,540	27	No	No	Bond issues
Niagara Falls...	50,760	M	8,500	100	Yes	Yes	Bond issue
Northport......	2,096	P	718	60	$35 each	Regular rates	Construction loan, half yearly refund on bills
Nyack.........	4,444	M	1,600	12	No	No	Water funds
Ogdensburg....	14,609	M	4,000	3	No	No	Bond issues and revenue
Ossining.......	10,739	M	2,500	97	No	No	Earnings
Owego.........	4,147	P	1,250	60	Yes	Yes	Company
Oxford.........	1,654	M	350	100	No	Yes	Revenue
Peekskill.......	15,868	M	2,500	100	No	No	Earnings
Phelps.........	1,354	M	582	100	No	No	Water rents
Rochester......	295,750	M	50,234	99	No	Yes	General city tax levy
Salamanca.....	9,276	M	2,300	100	Yes	Yes	Surplus
Saranac Lake...	4,055	M	1,300	None	No	No	Bond issue
Seneca Falls....	6,389	P	2,000	8	Lump sum	Lump sum	Company
Shortsville.....	1,228	M	348	100	No	Yes	Taxation
Solvay.........	7,352	M	1,100	100	Yes	No	Budget and current revenues
Spencerport....	848	M	275	99.5	Yes	No	City tax
Syracuse.......	171,717	M	32,000	95	No	No	Earnings
Tarrytown.....	5,807	M	1,000	99	Yes	No	Mains extension fund
Tonawanda....	10,068	M	2,400	15	No	No	Bond issue
Tupper Lake...	2,508	M	600	8	Yes	Yes	By note and made self-supporting
Watervliet.....	16,073	M	3,600	60	Yes	Yes	Revenue
Waverly.......	5,270	M	1,450	40	No	No	Surplus water rents
Weedsport and Jordan.......	......	P	493	4	Yes	Yes	Earnings
Wellsville......	5,046	M	1,200	80	Yes	Yes	
Yonkers.......	100,226	M	11,500	100	No	Yes	Bond issue
NO. CAROLINA							
Charlotte......	46,338	M	8,500	100	Yes	About 30% tariff rate	Receipts or sale of bonds
Dunn..........	2,805	M	450	100	No	No	
Elizabeth City..	8,925	P	1,000	None	Yes	Partly	Company
Gastonia.......	12,871	M	1,760	100	Yes	Yes	Regular funds or bonds
Greensboro.....	19,746	M	......	25	....	Yes	Bonds
Greenville......	5,772	M	1,400	70	Yes	Yes	Revenue or bond issues
High Point.....	14,302	M	1,700	99	No	No	General funds
Kings Mountain	2,800	M	300	50	No	No	Bonds
Kinston........	9,771	M	1,510	95	Yes	Yes	Earnings
Monroe........	4,084	M	800	100	No	No	Bonds
Mount Airy....	4,753	M	912	48	No	No	Revenue
Murphy........	1,500	M	200	90	No	No	City
Rocky Mount...	12,742	M	1,997	85	$40 year	Yes	Receipt and bonds
Sanford........	2,977	M	750	67	No	No	City
Southport......	1,664	M	300	None	No	No	General fund
Spring Hope....	......	M	103	100	No	None	General fund
Washington....	6,314	M	1,500	95	Yes	No	Current revenue
NO. DAKOTA							
Hillsboro.......	1,237	M	......	100	No	Yes	Bonds
Jamestown.....	6,627	M	900	100	$10 each per year	No	Special tax of ten years
Mandan.......	4,336	M	825	100	No	No	Water-works fund
Minot........	10,476	M	1,200	100	No	No	Special assessment on property benefited
Oakes.........	1,637	M	250	95	$25 each per year	No	General water fund
OHIO							
Ada...........	2,321	P	488	95	Yes	Yes	Earnings
Akron.........	208,435	M	40,000	98	No	No	Bond issues
Barberton......	18,811	M	3,300	95	$2,400	No	Bond issues
Bluffton........	1,953	M	428	70	No	No	Customer pays, reimbursed by water service
Brookville......	1,187	M	325	100	No	Yes	Water department

State and City	Population	Ownership	No. of Services	Per Cent Metered	City Pays Hydrant Rental?	City Pays For Water Used?	Financing of Water-Main Extensions
Canton........	87,091	M	18,000	100	No	No	Revenue
Carrollton......	2,192	M	600	100	No	Yes	City
Cincinnati.....	401,247	M	64,000	99	No	No	Paid by applicant
Circleville......	7,049	P	1,485	55	Yes	Yes	Water company, but city must take fire hydrant every 528 feet
Cleveland......	796,836	M	115,120	97.5	No	No	Assessments or earnings
Columbus......	237,031	M	40,232	98.9	No	No	Bond issue
Covington.....	1,848	M	504	100	No	No	Earnings
Dayton........	153,830	M	38,800	100	No	No	Mains laid when property served returns 8%; otherwise cash advance for cost
Delta..........	1,543	M	400	100	Yes	No	Through village council
Eaton.........	3,210	M	940	600	No	No	Earnings
Elyria.........	20,474	M	5,000	100	No	No	Special assessment
Euclid.........	......	M	1,240	90	No	No	Bond issue
Fostoria.......	9,987	M	2,600	100	No	No	City council, not to exceed $500
Granville.......	1,394	M	450	60	No	No	Council
Jackson........	5,842	P	900	75	Yes	No	Company
Lakewood......	41,732	M	9,350	100	No	No	Assessment
Lancaster......	14,706	M	2,761	90	No	No	Bond issue paid by water-works
Leipsic.........	1,733	M	450	75	No	No	Revenue
Lima..........	41,306	M	9,000	98	No	Yes	Bond issues
Loveland......	1,557	P	217	75	Yes	Yes	Consumers
Marietta.......	15,100	M	4,000	40	No	No	Revenue
Marion........	28,511	P	......	100	Yes	No	
Marysville.....	3,635	P	1,100	10	Yes	Yes	
Middletown....	23,594	M	5,200	99	No	No	Bond issues
Minster........	1,583	M	230	100	No	No	Earnings
Montpelier	3,052	M	910	80	No	No	Plant
Mt. Sterling....	1,071	M	340	98	No	No	Income
Napoleon......	4,143	M	900	100	No	No	Earnings
Newark........	26,718	M	6,000	100	No	No	Earnings and bond issues
Niles..........	13,080	M	2,600	5	No	No	Bonds
Norwood.......	24,966	M	5,000	100	No	No	Bonds
Perrysburg.. ..	1,913	M	420	100	No	No	Appropriation
Springfield.....	60,840	M	14,000	78	No	No	Earnings
Steubenville....	28,508	M	6,000	500	No	No	Appropriation from general fund
Tiffin..........	14,375	P	2,800	100	Yes	Yes	Company
Troy..........	7,260	M	1,925	100	No	No	Receipts
Upper Sandusky	3,708	P	1,000	100	Yes	Yes	
Urbana........	7,621	M	1,800	22	No	No	Funds from water-works department
Wadsworth.....	4,742	M	1,285	98	No	No	Foot front
Wapakoneta....	5,295	M	1,134	100	No	No	Profits and bonds
Warren........	27,050	M	6,578	91	Yes	No	Bond issues
Wellington.....	2,245	M	340	100	No	No	Earnings
Westerville.....	1,903	M	700	100	No	No	Earnings
Willington.....	5,037	P	778	100	Yes	Yes	Each 500 feet calls for one additional hydrant
Wyoming......	1,893	M	1,500	100	No	No	Accumulated funds or profits
Youngstown....	132,358	M	25,638	100	No	No	Bond issues
Zaresville......	29,569	M	8,000	12.5	No	No	Bond issue and revenue
OKLAHOMA							
Afton..........	......	M	300	5	No	No	Bonds
Ardmore.......	14,181	M	3,700	81	....	....	Bond issues
Atoka.........	2,308	M	368	100	No	No	Bond issues
Blackwell......	7,174	M	1,300	100	No	No	Earnings
Boley.........	......	M	155	80	No	Yes	Bond issue
Chickasha.	10,179	M	2,100	99	No	No	Bonds
Cleveland......	2,717	M	332	100	No	No	Bonds
Coalgate.......	3,009	M	650	90	No	No	Water department fund
Custer.........	1,000	M	90	100	No	No	Bonds
Edmond.......	2,452	M	710	96	No	No	Bonds and income
Haileyville.....	2,067	M	400	95	No	No	Water rentals
Henryetta......	5,889	M	1,700	100	No	No	Bond issue
Hinton........	1,000	M	200	100	No	....	Bonds
Holdenville.....	2,032	M	900	95	No	No	Bonds
Kingfisher......	2,447	M	......	100	No	No	
Lawton........	8,930	M	2,800	10	No	No	Revenue
Lehigh.........	......	M	290	98	No	No	Excess earnings
Madill.........	2,717	M	368	92	No	No	Bonds
Marlow........	2,276	M	344	98	No	No	Bonds
Miami.........	6,802	M	1,489	100	No	No	Bond issues and earnings
Newkirk.......	2,533	M	530	100	No	No	Appropriation
Oklahoma City.	91,258	M	15,320	100	Yes	Yes	Bonds and revenue
Picher.........	9,679	M	......	....	No	No	
Ryan..........	2,000	M	250	75	No	....	Bonds
Sentinel........	......	M	2	....	No	No	Bonds
Shattuck.......	......	M	270	40	No	No	Bonds
Stroud.........	1,220	M	300	90	No	No	Revenue
Wewoka.......	1,022	M	275	85	No	No	Bonds
Wynnewood....	2,200	M	600	67	No	No	Income or bonds

State and City	Population	Ownership	No. of Services	Per Cent Metered	City Pays Hydrant Rental?	City Pays For Water Used?	Financing of Water-main Extensions
OREGON							
Dallas	2,701	P	900	80	No	No	Company
Hillsboro	2,468	P	900	90	Yes	No	
Hood River	3,195	M	800	None	No	Yes	Appropriation
Jacksonville	785	M	180	75	No	No	None made
La Grande	6,913	M	1,850	100	No	No	General taxation
Salem	17,679	P	4,000	30	Yes	No	Company
Woodburn	1,616	M	500	95	No	Yes	Water-works
PENN.							
Akron	......	M	165	100	Yes	No	Special tax
Allentown	73,502	M	17,000	1.4	No	No	Property owners
Altoona	60,331	M	12,536	100	No	No	Assessment 25c foot front
Ambler	3,094	P	800	75	Yes	Yes	Company
Barnesboro	4,183	M	400	100	No	No	Water rentals fund
Beaver Meadows	1,709	P	......	....	....	....	
Bethlehem	50,358	M	11,410	1	No	No	Receipts
Bloomsburg	7,819	P	1,800	10	Yes	Yes	
Bradford	15,525	M	3,700	2.7	No	No	City
Butler	23,778	P	......	....	Yes	Yes	Company
Canton	1,637	P	600	2	Yes	Yes	Earnings
Carbondale	18,640	P	4,400	None	$20 each per year	Yes	Receipts or bond issues
Chambersburg	13,171	M	2,947	63	....	....	Consumers. 6% interest on investment until self-sustaining
Chester	58,030	P	16,000	100	Yes	Yes	Company
Clarion	2,793	P	700	100	Yes	Yes	
Clearfield	8,529	P	2,250	12	Yes	No	Sale of stock
Coatesville	14,515	M	......	–..	No	No	
Connellsville	13,804	P	......	....	Yes	Yes	Company
Corry	7,228	P	......	....	Yes	Yes	Company
Coudersport	2,836	P	651	None	Yes	No	Property owner
Danville	6,952	M	1,300	3	No	No	
Dillsburg	......	P	325	33	Yes	Yes	None made
Du Bois	13,681	M	......	100	No	No	City
Duquesne	19,011	M	2,200	100	No	No	Sinking fund
East Bangor	......	M	215	None	No	No	Borough funds
Easton	33,813	P	......	....	Partly	Yes	Company
Eldred	1,235	P	300	None	$475 year	None	Current funds
Ellwood City	8,958	P	2,000	100	Yes	Yes	Company
Erie	93,372	M	24,000	2.7	No	No	City
Falls Creek	1,500	M	268	100	No	No	Borough funds
Fayette	2,048	P	600	100	Yes	No	Bonds
Ford City	5,605	M	1,200	80	Yes	Yes	Borough funds and bonds
Fountain Spgs	1,000	M	......	....	Yes	....	
Franklin	9,970	M	3,000	5	Yes	No	Water department
Freeland	6,666	P	215	20	Yes	No	Company
Girard	1,176	M	280	100	No	No	Income
Greenville	8,101	P	2,200	100	Yes	Yes	
Harrisburg	75,917	M	20,000	87	No	No	Assessment rebated in water rents
Hazelton	32,267	P	......	....	Yes	Yes	Company
Homestead	20,452	M	......	....	No	No	General funds
Huntingdon	7,051	M	2,011	2	Yes	No	Revenue
Hyndman	1,164	P	318	None	....	....	
Indiana	7,043	P	1,800	75	Yes	No	Revenue
Jenkintown	3,366	P	1,398	99	Yes	No	Cash
Jersey Shore	6,103	P	1,663	2	Yes	Yes	
Johnsonburg	5,400	M	1,078	10	Yes	Yes	Receipts
Johnstown	67,327	P	......	....	Yes	Yes	Company
Juniata	7,660	M	1,800	1	No	No	Borough
Kittanning	7,153	P	2,000	3	Yes	No	Bondholders
Kutztown	2,684	M	600	48	Yes	Yes	Water department
Lancaster	53,150	M	16,000	50	No	No	General city fund
Lansford	9,625	P	4,156	20	Yes	Yes	Company
Lebanon	24,643	M	......	....	No	No	City
Lewistown	9,849	P	3,850	6	Yes	Yes	Company
Lock Haven	8,557	M	......	....	No	No	
McKeesport	45,975	M	8,700	86	No	No	City
Malvern	1,125	M	340	100	No	No	Taxes
Manheim	2,712	P	900	90	Yes	Yes	Company
Mauch Chunk	3,666	P	900	1	No	Yes	Earnings
Meadville	14,568	M	3,399	100	No	No	Earnings
Monongahela	8,688	P	......	....	Yes	Yes	Company
Mount Jewett	1,771	P	300	90	Yes	Yes	Undivided profits
New Bethlehem	1,662	P	500	67	Yes	No	Earnings
New Castle	44,938	P	......	....	Yes	Yes	Company
New Holland	1,106	M	375	10	No	No	Bond issue
New Kensington	11,987	P	3,800	100	Yes	Yes	Company or guaranteed revenue
New Wilmington	758	P	250	50	Yes	No	Surplus earnings
Oil City	21,274	M	......	100	No	No	Assessment
Perkasie	3,150	P	700	10	Yes	Yes	Company
Phoenixville	10,848	M	1,350	1	No	No	Bonds
Pittsburgh	588,193	M	94,288	40	No	No	Bond issue
Pittston	18,497	P	......	....	Yes	Yes	Company
Pottsville	21,785	P	......	....	Yes	Yes	Company
Rankin	7,301	M	1,000	100	No	No	General taxation

State and City	Population	Ownership	No. of Services	Per Cent Metered	City Pays Hydrant Rental?	City Pays For Water Used?	Financing of Water-Main Extensions
Reading	107,784	M	25,000	6.5	No	No	Revenue
Reynoldsville	4,116	M	826	100	No	No	Service charge and sinking fund
Sharon	21,747	P	6,500	60	Yes	Yes	Bonds
Shellington	......	P	800	....	Yes	No bldgs.	Earnings
Shinglehouse	1,600	P	200	5	No	No	Company
Somerset	3,121	M	900	100	No	No	Borough
Summit Hill	5,499	P	800	100	Yes	Yes	Money borrowed on notes
Susquehanna	3,764	P	814	5	Yes	No	Income
Titusville	8,432	M	......	....	No	No	City
Trevorton	......	P	150	None	No	None	
Troy	1,288	M	375	......	No	No	Bond issues
Tunkhannock	1,598	P	600	5	Yes	....	Borrowing money
Uniontown	15,609	P	4,200	100	Yes	Yes	
Walnutport	......	P	96	50	No	No	Revenue
Waynesboro	9,720	P	2,100	1	No	No	Receipts
Waynesburg	3,332	P	1,707	100	Yes	Yes	
West Newton	2,645	P	620	100	Yes	Yes	Bonded indebtedness
Wilkes-Barre	73,828	P	......	....	Yes	Yes	Company
Wilkinsburg, etc	......	P	16,250	100	Yes	Yes	New capital when revenue warrants. Otherwise by applicant, refunded
Williamsport	36,198	P	12,000	75	....	....	Issuing securities
Williamstown	2,878	P	800	None	Yes	None	Company
Windber	9,462	P	2,135	23	Yes	No	Earnings and bonds
Woodlawn	12,495	P	1,831	100	Yes	Yes	
Wyomissing	985	P	600	....	Yes	Yes	Individuals and company
York	47,499	P	......	....	Yes	Yes	Company
SO. CAROLINA							
Bennettsville	3,197	M	500	100	No	No	Profits
Bishopville	2,090	M	350	85	No	No	Bond issues
Charleston	67,957	M	8,945	100	Yes	Part	Income
Chester	5,557	M	950	70	No	No	Bond issue and profits
Clinton	3,767	M	980	100	No	No	Revenue
Columbia	37,524	M	5,554	99	No	No	Bond issue
Easley	3,568	M	250	50	No	No	Bond issue
Greenwood	8,703	M	1,400	90	No	No	Earnings
Greer	......	M	475	100	No	No	Appropriation
Laurens	4,629	M	550	100	No	No	Bonds
Manning	2,022	M	250	100	No	No	Earnings
Orangeburg	7,290	M	1,200	85	No	No	Bond issues and earnings
Pelzer	4,000	P	700	None	No	No	Company
St. George	......	P	100	10	Yes	No	City
Seneca	1,460	M	125	100	No	No	
Sumter	9,508	M	1,550	98	Yes	Yes	Income
SO. DAKOTA							
Ft. Pierre	1,000	M	216	None	No	No	Water fund
Lemmon	1,255	M	74	95	No	No	Bond issues
Ipswich	810	M	200	100	....	....	Water fund and bonds
Madison	4,144	M	650	100	No	No	Bond issue
Watertown	9,400	M	1,525	99	Yes	Yes	Assessed and later refunded as owner uses city water
Yankton	5,024	M	775	100	No	No	Water fund
RHODE ISLAND							
Coventry	5,670	P	1,800	50	Yes	Yes	Company
Jamestown	1,337	P	550	3	Yes	No	Certain amounts set aside yearly by company
Narragansett Pier, etc	......	P	1,000	25	Yes	Part	Company
Providence	237,595	M	33,985	94	Yes	Yes	Revenue
Woonsocket	43,496	M	5,700	95	Yes	Yes	Appropriations
TENNESSEE							
Clarksville	8,110	M	1,300	60	No	No	Revenue
Coal Creek	3,000	P	85	....	Yes	Yes	Company
Cookville	2,395	M	450	100	No	Yes	Bonds
Covington	3,410	M	700	None	No	No	General city fund
Dickson	2,263	M	408	None	No	No	Water department
Dyersburg	6,444	M	1,000	100	No	No	Earnings
Elizabethton	2,749	P	750	None	Yes	No	Earnings
Erwin	......	P	603	23	Yes	No	New capital or earnings
Greeneville	3,775	M	1,000	50	No	No	Water revenue, taxes and bonds
Humboldt	3,913	M	825	100	No	No	Earnings
Jellico	1,878	M	500	85	Yes	Yes	Bonds and earnings
Kingsport	5,692	P	850	100	Yes	Yes	
Lebanon	4,084	M	500	60	No	No	Taxes and bond issue
Lexington	2,000	M	350	10	No	No	
Nashville	118,342	M	25,000	88	No	Yes	Bond issue or revenue
Newport	2,753	M	600	50	No	No	Income
Obion	1,500	M	265	10	No	No	Customers
Somerville	1,387	P	160	None	No	Yes	City
Shelleyville	2,912	P	650	8	Yes	Yes	Company

State and City	Population	Ownership	No. of Services	Per Cent Metered	City Pays Hydrant Rental?	City Pays For Water Used?	Financing of Water-main Extensions
TEXAS							
Arlington......	3,031	M	800	75	No	No	Water rents
Bay City......	3,454	M	580	70	No	No	Earnings
Beeville........	3,063	P	182	90	Yes	Yes	
Bishop.........	......	P	150	75	Yes	Yes	Appropriation
Brownsville....	11,791	M	1,500	100	Yes	Yes	
Bryan.........	6,307	M	1,200	100	Yes	Yes	Earnings
Denison........	17,065	M	4,400	80	No	No	Income
Denton........	7,626	M	1,740	83	No	No	Earnings
Elgin..........	1,707	M	200	50	No	No	Bonds
Floresville......	1,398	M	275	50	No	No	Bonds
Gainesville.....	8,648	M	2,250	97	No	No	Income
Granbury......	1,336	P	260	None	Yes	No	
Hempstead.....	2,614	P	150	None	No	....	Company
Honey Grove...	2,642	P	500	90	Yes	Yes	Locally
Itasca.........	......	M	420	75	No	No	Water funds
Lewisville......	......	M	250	10	No	No	Income
Longview......	5,713	M	650	100	No	No	Earnings
Lufkin.........	4,878	M	700	85	....	....	Taxation
McKinney.....	6,677	M	1,500	100	No	No	Revenue
Mercedes......	3,414	P	652	None	No	Yes	Earnings
Mt. Pleasant...	4,099	M	475	100	No	No	City
Pecos..........	3,000	M	60	100	No	No	Bonds
Port Arthur....	22,251	M	4,000	100	No	No	Bonds and revenue
Sealy..........	1,370	P	310	10	No	No	Company
Valley Mills....	708	P	225	None	No	No	Company
Victoria........	5,957	M	1,100	80	No	No	Property owners
Weatherford....	6,203	P	890	85	Yes	No	
Yoakum.......	6,184	P	......	....	Yes	Yes	
UTAH							
Brigham.......	5,282	M	1,730	2.4	No	No	City
Heber.........	1,931	M	450	None	No	No	City
Logan.........	9,439	M	3,000	2	Yes	Yes	Reserve built up by license fees
Murray........	5,584	M	575	1	No	No	City
VERMONT							
Barre..........	10,008	M	1,400	44	No	....	
Fair Haven.....	2,540	M	500	....	No	No	Receipts
Hartford.......	4,738	P	83	22	No	No	Company
Northfield......	3,096	M	375	80	Yes	No	Water department
Richford.......	2,842	M	350	None	No	No	Village funds
St. Albans.....	7,582	M	1,400	95	No	No	Water department
Windsor.......	3,061	M	2,500	1	No	Yes	Water board
Woodstock.....	2,370	P	450	None	Yes	Yes	Corporation
VIRGINIA							
Appalachia.....	......	P	600	100	Yes	Yes	Cash
Chatham......	1,113	M	225	95	No	No	Water dept. fund
Fredericksburg..	5,882	M	1,400	40	No	No	Revenue
Front Royal....	4,194	P	500	5	No	No	Town
Newport News..	35,596	P	9,700	82	Yes	Yes	
Petersburg.....	31,002	M	5,000	100	No	No	Bond issue
Richlands......	1,171	M	128	None	No	No	Bonds
Smithfield......	1,278	P	250	None	Yes	No	Company
WASHINGTON							
Aberdeen......	15,337	M	3,450	14	Small	Yes	Water fund built up by revenues
Anacortes......	5,284	M	1,077	31	$5 each per month	No	Revenue fund
Auburn........	3,163	M	1,050	15	$2,25 each per month	No	Property owners pay part; department pays balance. Replacement by dept.
Bellingham.....	25,570	M	7,000	16	Yes	No	Revenue
Bremerton.....	8,918	M	3,600	85	Yes	No	Receipts
Burlington.....	1,000	P	250	15	Yes	....	
Chehalis.......	4,558	M	1,332	12	Yes	No	Water department fund
Chelan and Lakeside.....	......	P	505	82	Yes	No	
Edmonds......	1,114	P	400	5	No	No	Company
Ione...........	634	P	180	10	Yes	No	
Kalama........	816	M	367	30	Yes	No	Bonds
Kennewick.....	1,800	P	422	100	Yes	Yes	Company
Kent..........	2,282	M	800	20	Yes	No	Department
Newport.......	1,199	P	480	10	....	....	
Port Townsend.	2,847	M	835	15	Yes	Yes	Operating fund of 25% of gross receipts
Pullman.......	2,440	M	834	100	No	No	Water rentals
Rockford.......	663	M	125	100	No	No	Levy
Seattle........	315,652	M	56,000	100	Yes	Yes	Local improvement assessments
Sedro-Wooley...	3,389	P	700	10	Yes	....	
Shelton........	1,163	M	200	None	No	No	
Spokane.......	104,437	M	27,300	95	Yes	No	Guarantee of 10% of cost for five years
Sunnyside......	1,379	M	543	100	50c month	No	Surplus of earnings
Tacoma........	96,965	M	23,000	10	Yes	Yes	Local improvement districts

State and City	Population	Ownership	No. of Services	Per Cent Metered	City Pays Hydrant Rental?	City Pays For Water Used?	Financing of Water-Main Extensions
Vancouver.....	12,637	P	3,010	100	Yes	No	
Walla Walla....	15,503	M	4,100	35	Yes	No	Water department
Winlock.......	1,400	P	235	42	Yes	No	Income
W. VIRGINIA							
Beckley........	4,149	P	1,185	33	Yes	Yes	Earnings
Charleston.....	30,608	P	11,000	60	Yes	Yes	Up to 3 years estimated revenue by company; over by customers
NewMartinsville	2,341	M	650	None	No	No	
Princeton......	6,224	P	1,250	95	Yes	No	Company
Sistersville.....	3,238	M	1,000	3	No	No	Taxes
Sutton.........	1,121	P	275	10	Yes	....	Company
Terra Alta.....	......	P	275	25	Yes	No	
WISCONSIN							
Algoma........	1,911	M	255	100	Yes	Yes	Bonds and appropriation
Augusta.......	1,405	M	175	100	Yes	Yes	City
Beaver Dam....	7,992	M	2,000	80	Yes	No	Bonds
Beloit.........	21,284	P	4,871	100	Yes	Yes	
Bloomington....	700	M	95	85	No	No	Village
Brodhead......	1,517	M	330	70	Yes	No	Earnings
Chilton........	1,833	M	240	100	Yes	Yes	City
Clintonville....	3,275	M	637	100	Yes	Yes	City
Cumberland....	1,445	M	400	None	Yes	Yes	Half by city and half by property owner
Darlington.....	1,808	M	675	65	No	Yes	Water tax
Elkhorn........	1,707	M	500	100	Yes	Yes	Appropriations
Green Bay.....	31,017	M	6,432	100	Yes	Yes	Assessment against property
Hartford......	4,515	M	1,000	100	Yes	No	City from general fund
Janesville......	18,293	M	4,100	100	Yes	Yes	Assessment for cost of 6-inch main; balance by company
Kaukauna......	5,591	M	962	100	Yes	Yes	Bond issues or earnings
Ladysmith.....	3,581	M	650	98	Yes	Yes	Bonds
Lake Geneva...	2,632	M	700	98	Yes	Yes	City
Manitowoc.....	17,563	M	......	199	Yes	Yes	Earnings
Maxomanie....	917	M	74	4	Yes	No	Village
Menasha.......	7,214	M	1,200	100	Yes	Yes	Bonds or general fund from taxes
Monroe........	4,788	M	947	76	Yes	No	Appropriation from general fund
Neenah........	7,171	M	1,350	100	Yes	Yes	General tax fund
Neillsville......	2,160	M	448	98	Yes	Yes	General fund
New London...	3,568	M	600	80	Yes	Yes	Light and water fund
Onalaska.......	1,146	M	258	30	Yes	Yes	General fund
Oshkosh.......	33,162	M	5,200	50	Yes	Yes	Earnings
Randolph......	......	M	196	100	Yes	No	Bonds
Rhinelander....	6,654	M	1,530	1	Yes	Yes	General fund of city
Shawano.......	3,544	M	315	100	Yes	Yes	Assessment
Tomah........	3,257	M	875	90	Yes	Yes	Appropriation
Watertown.....	9,299	M	1,800	100	No	Yes	Earnings and bond issue
Wisconsin Rapids......	......	M	1,900	99.8	Yes	Yes	General city fund
WYOMING							
Casper.........	11,447	M	3,300	90	No	No	Rents and bonds
Sheridan.......	9,175	M	2,114	80	No	No	Bond issue
ALBERTA, Can.							
Calgary........	.. ..	M	13,822	6.5	$30 each per year	Yes	By-law after approval by electors
Red Deer......	......	M	390	10	$50 each per year	No	Debenture issued
Stettler........	......	M	400	10	Yes	Yes	Debentures
Vegreville......	......	M	40	100	Yes	None	Debenture
BRITISH COLUMBIA							
Kelowna.......	......	M	827	70	No	Yes	Revenue
Penticton......	......	M	1,150	None	$40 each per year	Yes	By-law submitted to people
Vancouver.....	......	M	24,466	8	No	No	By-laws submitted to rate payers
Victoria........	......	M	9,000	100	Yes	Yes	Loans
MANITOBA							
Carman........	......	M	65	90	No	Yes	Debentures
NEW BRUNSWICK							
Moncton.......	......	M	3,100	1	Yes	Yes	Bond issues
St. Stephen.....	......	M	800	12	Yes	No	Bond issue
NOVA SCOTIA							
Sydney........	......	M	3,086	1	No	No	Bonds
Yarmouth......	......	M	1,500	1	No	No	General revenue

State and City	Population	Ownership	No. of Services	Per Cent Metered	City Pays Hydrant Rental?	City Pays For Water Used?	Financing of Water-Main Extensions
ONTARIO							
Brantford	......	M	7,711	40	Yes	Yes	30-year debentures
Brockville	......	M	2,525	1	$5,000 year	No	Debenture
Clinton	......	M	685	65	Yes	Yes	Debenture
Elmira	......	M	414	15	Yes	Yes	None made unless 10% annual revenue is guaranteed
Gananogue	......	M	730	100	Yes	Yes	Bonds
Hawkesbury	......	M	1,100	None	Yes	No	Debentures
Midland	......	M	1,400	4	Yes	Yes	Debentures
Orangeville	......	M	760	None	No	Yes	None lately
Ottawa	......	M	22,000	4	No	No	Debentures
Owen Sound	......	M	2,300	5	Yes	No	Debenture and revenue
Paris	......	M	1,200	None	Yes	Yes	Debenture
Perth	......	M	1,000	1	Yes	Yes	Debentures
Rainy River	......	M	175	None	Yes	Yes	Bonds
St. Catherines	......	M	6,141	3	$20 each	Yes	Revenue
St. Marys	......	M	840	5	Yes	No	Debentures
St. Thomas	......	M	4,376	54	$8,000 year	Yes	Bond issues
Sault Ste. Marie	......	M	6,000	18	Yes	Yes	Earnings
Stratford	......	M	4,200	78	$30 each per year	No	Frontage tax
Thorold	......	M	1,200	1	Yes	Yes	Debentures
Tillsonburg	......	P	750	....	No	Yes	Profits
Walkerville	......	P	3,500	10	$30 year	Part	Company inside Walkerville limits
Whitby	....	M	712	17	Yes	Yes	30-year debentures
PRINCE EDWARD ISLAND							
Charlottetown	......	M	2,500	2	No	No	Bonds
QUEBEC							
Laprairie	......		525	5	No	No	
Lennoxville	......	M	325	5	Yes	No	Municipality on guarantee of 10% revenue
Outremont	.....	P	3,300	None	No	Yes	City guarantees revenue of 10%
Sherbrooke	......	M	2,606	15	No	No	Revenue
SASKATCHEWAN							
Moose Jaw	......	M	2,913	100	Yes	Yes	Bond issue

It's Up to You

TUBERCULOSIS kills 100,000 people in the United States every year, the majority of whom are workers. Yet tuberculosis is a preventable and curable disease—preventable if the simple rules of healthful living, sufficient rest, good food and fresh air are conscientiously followed, and curable if proper medical treatment of the disease is begun while it is still in an early stage. Tuberculosis kills the greatest number of workers during the years when men and women should be at the height of their earning power and able to enjoy life to their fullest capacity. This disease takes three-fifths of its toll during the age period of 15 to 44.

Tuberculosis can be eradicated by education. Since 1904, when the first feeble attempts at anti-tuberculosis work began in this country, the death rate from the disease has been cut exactly in half. Proper institutional facilities in the form of clinics, hospitals and sanatoria are in a large measure responsible for this decrease, though the most far-reaching achievements have been rendered by such preventive measures as open-air schools and summer camps for the children of tuberculous parents, nutrition classes, instruction in hygiene and disease prevention in the home, and so on.

The tremendous task in which the National Tuberculosis Association and its 1,200 affiliated organizations are engaged is made possible through the annual sale of Christmas Seals. It is estimated that in a town of 100,000 population 100 lives can be saved each year from the scourge of tuberculosis. Every Christmas Seal you buy helps to preserve your life and the lives and happiness of others.

Europe Offers City Planning Ideas for America

By Jacob L. Crane, Jr.

Municipal Development Engineer, Chicago

THE outstanding differences between European and American cities are:

First, that we carry on enormously greater volumes of business in our towns and cities, but with vastly greater waste of material and energy. Second, with this greater volume of business on limited city areas we are developing distinctive architecture and distinctive business facilities. But we do not seem to understand that the European cities, by virtue of a long tradition in careful planning, can help us in almost every phase of civic development.

We can find in the European cities ideas and solutions which will save us time, trouble and money, and give us finer results in our city planning, if we study them in the light of our own specific problems and are open to the inspiration and suggestion which they offer on every hand.

Traffic and Transportation Problems

Street planning to accommodate modern auto traffic in America presents problems more critical and extensive than in Europe, but we can still learn much from European examples, such as the traffic squares and the traffic ways of Paris, and the ring streets of the German and, more recently, of other European cities. American cities are struggling now to overcome the handicap of their notorious checkerboard street plans.

Likewise, in matters of city transit we have been compelled to build systems larger than those in Europe. Nevertheless, although the delightful water-transit systems of Venice and the Dutch cities can help us little, we can get pointers from other transit systems in Europe: from Birmingham, which is taking all trams out of a half-mile circle in the business center; from Milan, where plans are being made for a coordinated system of subways, tramways, and terminal railways; from the omnibus and the state-owned side-car and taxicab systems of Paris and Rome respectively.

American railway terminals are famous, but our water terminal problems are still unsettled, and nearly every large city in

A VIEW OF THE TUILERIES, PARIS
The beauty of Paris would fade without its trees

Europe, outside of southern Italy, can show us something about water terminals. Particularly in the development of inland waterways and the coordination of these with ocean harbors, have they gone far beyond us. Marseilles, for example, is now completing a wonderful new harbor, canal, and town planning scheme. The present city, surrounded by mountains and the sea, needed room to expand; the ocean harbor had become inadequate; and the canal connecting the Rhone with the sea ended with some miles of open water between its outlet and Marseilles. So the ocean port was extended in the direction of the canal outlet, a tunnel nearly five miles long was driven through the mountain to bring the canal to the new harbor, and where they meet, in a place formerly of little use because without transit facilities, a great industrial extension to the city itself is planned and being developed. For our river cities the inland canal and river ports of Manchester, Rouen, Frankfort, Lyons, even Vienna, are full of suggestion. As populations increase and the use of natural resources becomes necessarily more frugal and intensive, river and canal transport is certain to develop in America, and the schemes in Europe can help us to plan well.

Better Living Conditions

From one angle, city planning may be viewed as an effort to make our cities places where people may live and work without suffering the ill effects which we have been accepting as a part of city life. The problem of housing is fundamental here, and while we have done well in housing legislation, prohibiting the construction of insanitary dwellings, the European cities have one and all done far more to relieve the housing shortage, and, to a lesser degree, to clear out overcrowded and unhealthy areas. Demolition for clearing has been going on for several years in various European cities, notably in Liverpool, Dublin, Birmingham and London, and, on the continent, in Marseilles, Brussels and several German cities. Municipal tenements, new streets, open squares and playgrounds take the place of the old shambles.

In new house construction to relieve the housing famine, England under the national housing schemes, has produced about 100,000 houses by municipal enterprise. Now that the national subsidy has been curtailed, this work is going on by other expedients in many communities. On the contitent practically every important city has taken up housing as a municipal project. A variety of methods of organization and finance have been used. Whenever American cities take up house-building, they can learn from European experience.

The cooperative suburb, the garden city, and copartnership schemes which have been developed to a high point in England, and which are now being undertaken along similar lines in other European countries, are valuable and significant experiments. The cooperative garden city, in fact, may hold the solution, to a great extent, of the vital problems of community organization in our industrial civilization.

Regional Planning

One of the most important things, as many cities in Europe have learned and others are learning, is to have city planning extend beyond the city boundaries, either by legal control or by some sort of joint action of the authorities concerned. Sometimes the consolidation of

DWELLINGS IN AMSTERDAM
The municipal housing in Holland is regarded by many as the best in the world

WATER-FRONT FACILITIES AT ROUEN, FRANCE

several adjoining communities into one large administrative unit helps city planning to realize its best possibilities. Over eighty separate communities have recently been consolidated into one Greater Berlin; and twenty-five adjoining boroughs now make up Greater Prague. Here, and in other cities of the continent, and in England, there is much to be learned from the methods of extending municipal jurisdiction without creating the added evils of the overgrown city.

This leads to the consideration of regional planning. In Wales, and in the Essen district in Germany, to mention two of the most interesting examples, areas of common industrial interest are being planned as units, on the basis of civic surveys for each entire district. Important district-zoning is being done in England, as at Ruislip-Northwood.

The Element of Charm

In public squares, places for meetings and concerts, outdoor cafés and promenades, and all the incidental elements which go so far to give charm to European cities, we can find suggestions for our own use in almost every city on the continent. We cannot, of course, exactly copy the great squares of Paris or its delightful outdoor cafés, the promenades and municipal theaters of the German and Austrian cities, the wonderful open-air bell concerts of Bruges or Ghent, the colossal covered arcade of Milan, nor the great overlook terraces of Brussels and Rome. But we can find valuable ideas in all of them.

In searching for the fundamental element of charm in European cities we sometimes overlook the important thing because it is not where we would expect to find it. Paris, for instance, contrary to the usual notion, depends for its charm on its trees, which are preserved with great care in even the busiest sections. It is true that the American town has a great advantage over the average European town because we have preserved our trees. But the great American cities can learn from Paris that it is possible and desirable to maintain trees in the heart of a city.

Europeans would warn us particularly about one danger. They know the charm and individual character which come from the slow building of a town by the addition of one house at a time, each suited to its own situation and uses. The imposed plan tends to reduce this element of picturesque growth, to give a uniform stamp to all the streets and buildings. So here begins the argument for planning as loosely as possible, to allow for changes, for some individual caprice, and to make convertibility feasible as conditions change.

Solving the Ash and Rubbish Collection Problem

Evanston, Ill., Cuts Hauling Cost from $1.44 to 31.3 Cents per Cubic Yard

THE city of Evanston, Ill., which has a population of 37,234 people and is just to the north of Chicago, has experimented with the collection of ashes and miscellaneous rubbish by large and by small trucks. Hal W. Smith, Commissioner, Department of Streets, has closely analyzed the costs of hauling with 3 large trucks and 16 teams and with 8 1-ton trucks equipped with Lee 4-D bodies.

The figures for collection with 3 large trucks and 16 teams are approximate, as no accurate costs were kept. However, they are based on the performance throughout last year and are considered practically accurate. The figures for the cost of handling with the small trucks are actual, based on the performance of the trucks since their installation about the first of January, 1922. The up-keep on these trucks is based on the up-keep of similar trucks on a similar class of work over last year and, as the trucks used last year were very old, it is probable that the estimated up-keep is high. However, that is a small item and does not materially affect the figures.

The following table gives the detailed cost of collection last year when 3 large trucks and 16 teams were used:

3 trucks at a fixed charge of $8 per day each.	$24.00
16 teams at a fixed charge of $5 per day each.	80.00
19 teamsters and truck drivers at $4.40 per day each	83.60
6 laborers at $4 per day each	24.00
Total daily cost	$211.60
Average daily collection, cubic yards	150
Average daily collection, tons	60
Average haul, miles	2.05
Average ton-miles per day	123
Average cost of collection and disposal per yard	$1.44
Average cost of haul per ton-mile	$1.72

The average cost of haul, which amounted to $1.72 per ton-mile, was too great, as a continuation of collection at these figures would make it impossible for the city to keep within its income, particularly because of the rapidly increasing population. An investigation of other means of collecting and disposing of ashes and rubbish was immediately instituted. After a most exhaustive survey, it was decided to purchase 8 1-ton trucks. The

TYPE OF BODY USED TO HANDLE GENERAL REFUSE IN EVANSTON, ILL.

figures given below are based on the use of this new equipment, which has been in service the greater part of this year, but prorated over the 300 working days per year. These trucks are equipped with pneumatic tires all round, with 33- by 5-inch rear tires, modified Lee 4-D bodies, standard enclosed cabs, and speedometers, and cost as they stand, $852 each. The figures below give the average daily cost of operation per truck:

It is expected that the annual savings in Evanston will amount to $15,000 to $20,000 per year, because of the change from the heavier equipment.

Interest, insurance and depreciation		$1.36½
Tire cost		.40
Gasoline and oil		1.56
Maintenance and repairs		.60
Total fixed charges		$3.92½
Labor:		
1 truck driver	$4.40	
1 helper for 2 trucks	2.00	
		6.40
Total fixed and labor charges		$10.32½
Average number of loads per truck		11
Average number of yards per truck		33
Average number of tons per truck		13.2
Average mileage per truck		45
Average round-trip distance, miles		4.1
Average haul, miles		2.05
Average ton-miles per day		27.06
Average running time, hours		4
Average speed per hour, miles		11¼
Average idle time, hour		1
Average shoveling time, hours		3
Cost of collection and disposal per yard		$0.313
Average cost per ton-mile		$0.382

Road Building a Part of Brazilian Centenario

Penetration Asphaltic Macadam Boulevard Laid 72 Feet Wide

A PART of the celebration in connection with the Brazilian Centenario, being held in Rio de Janiero to commemorate the 100th anniversary of Brazilian independence, will be the completion of the remaining unfinished portion of the magnificent Boulevard Beira Mar.

In 1903, construction work was started on this "show street" of Rio, and seven years later the highway was completed, with the exception of the "Widows Mount" section. This unfinished portion of Beira Mar is where the Morro da Viuva, or Widows Mount, juts out into Guanabara Bay as a sort of promontory and rises 259 feet from the water-line, a solid wall of granite construction.

In order to complete the route of Boulevard Beira Mar, it will be necessary to cut away and level the side of this mountain. Approximately 3,531,670 cubic feet of granite will have to be blasted out of the wall to make room for the highway, which will occupy a total area of about 17,820 square feet. The distance around the back of Widows Mount is only about 1½ kilometers (4,920 feet), but in order to preserve the contour and beauty of the boulevard, work was begun on cutting through the hill January 1, 1922.

Boulevard Beira Mar is one of the most attractive in the world. Flanked by trees its entire distance, it runs along the shore of Botafogo Bay from Avenida Rio Bronco on the north to—including the new section—Penedo da Urca (Big Stone Hill) on the south, a distance of about five miles. It is constructed with Bermudez asphalt by the penetration method and is 72 feet wide for the entire distance.

The Need for a Federal Air Law

From a Statement by the Aeronautical Chamber of Commerce of America, Inc.

THREE deficiencies operate to the serious embarrassment of American aviation—meager capital, insufficient terminal facilities, and popular doubt as to reliability. The correction of these deficiencies, and the consequent opportunity for the rapid growth of aerial transport, depend upon Federal regulation and reasonable control through an Aerial Code.

The experiences of the inland waterways and the railroads either in burdening themselves with huge terminal debts, or in struggling selfishly for the exclusive control of available sites—a control which meant private monopoly and this, in turn, public burden—point the way for the sound economic treatment of the air-port problem. The establishment of common terminals for the encouragement of all aviation, and for the national security in time of need, is a public responsibility, which, if neglected now, will invite difficulties within a few years similar to those in which the waterways and the railways now find themselves.

At the close of 1921 the operating reports showed a total of 146 air terminals, both land and water, within the United States. All were for heavier-than-air craft. This is an increase of 26 over the preceding year. Of the total number, 30 were classified as seaplane bases. Sixteen of the 146 were publicly owned or controlled.

Deprive the rail and ocean carriers of depots and docks, and operation must cease. Withhold terminals from the American aircraft industry, and aerial transport can achieve neither size nor reliability. The 146 terminals reported available to commercial aircraft in the United States represent the facilities for 600 machines without regard to geographical or business requirements. The wonder is that there has been so much paid flying from so few fields.

One hundred twenty-five established companies, operating 500 to 600 two- and three-place machines, made 130,736 flights, covering 2,907,245 miles and carrying 122,512 passengers in the 12 months October 1, 1920-October 1, 1921. In making their reports, these companies seemed careful to itemize all forced landings, crashes, etc. Yet the number of accidents in which persons were killed or injured totaled but 24.

Six Requisites for Safe Flying

Experience has taught that in safe flying there are the following requisites:

TRANSFERRING MAIL FROM A PLANE TO A WHITE TRUCK AT THE CLEVELAND LANDING FIELD

1. A machine sound, aerodynamically and structurally
2. An engine of sufficient power, which operates satisfactorily
3. A competent, conservative pilot and navigator
4. Air ports and emergency landing fields, sufficiently close together to insure gliding to safety
5. Nation-wide weather forecasts specialized and adapted to the need of flyers
6. Nation-wide charts of air routes

It is estimated that during the calendar year 1921, 1,200 aircraft were engaged in civil flying in the United States and that these flew 6,500,000 miles and carried 250,000 persons. These figures are approximate and include both the itinerant and fixed-base flying. Many press reports may be inaccurate and unfair as to causes, but they afford the only index into the comparative safety of the total aerial activity.

One hundred fourteen accidents occurred, resulting in death to 49 persons and injury, more or less serious, to 89. In 48 of the accidents there were no casualties; 49 lives were lost in 33 accidents, and 89 persons injured in 42 accidents.

Each of the 114 accidents recorded was caused by deficiency in one or more of the six requisites for safe flying. Forty-nine were attributed to the pilot, perhaps through carelessness, perhaps incompetence, perhaps bad judgment combined with other factors. There is no doubt that a good pilot can guide a poor machine to safety with greater chance of success than a poor pilot can operate a first-class craft. Therefore, at the very top of the list of governmental needs we place the Federal examination and licensing of pilots. During the war rather more than 17,000 young men were trained to fly. The knack of flying cannot be retained perpetually without practice, nor can it be maintained at a high degree of competency without regular examination on a common standard for all flying throughout the United States. The same is true of aerial navigators. Both pilot and navigator (many times they are identical) are of equal importance in safeguarding the lives of travelers by air.

Inadequate Landing Fields

Twenty accidents are attributed, in whole or in part, to inadequate landing fields or to the total lack of terminal facilities. Here is a duty directly imposed upon the Federal Government. During the war the Army and the Navy acquired many terminals, most of which have since been abandoned. The fragmentary remainder has been slightly added to by the Air Mail, municipalities and private enterprise, but the United States is to-day woefully lacking in air ports for even the 1,200 craft in operation.

The Airways Section of the U. S. Army Air Service, under Captain Burdette Wright and Captain St. Clair Streett, in the absence of a centralized civilian authority functioning on behalf of commercial aviation, is trying to encourage the development of our air terminals. Relying on voluntary local reports, the Airways Section is taking a census of available sites and is providing practical construction and flying advice to municipalities and to private enterprise.

In July, 1921, an Air Law Conference was held in the office of Secretary of Commerce Herbert Hoover. It was participated in by representatives of the Aero Club of America, the Manufacturers Aircraft Association, the National Aircraft Underwriters Association, and the Society of Automotive Engineers. Practically the first inquiry Mr. Hoover made, after listening to a statement of the general situation, was whether the most urgent need was for regulation and the protection of public life and property. He received an answer in the affirmative. The Aeronautical Chamber of Commerce made a survey of accidents due to unregulated flight. The result was that a bill was drafted providing for a Bureau of Civilian Aeronautics in the Department of Commerce. The bill passed the Senate in February, 1922. In November it languished in the House Committee on Interstate and Foreign Commerce.

Notwithstanding the lack of air law, aviation progressed during the year, culminating in the National Air Races in Detroit in October. This actually marked a new era in American aviation, for the 200 planes participating in the greatest flying meet of all time actually demonstrated the qualities of safety and dependability so essential to safe flying. The year 1922 will undoubtedly place the United States well in the lead in world aeronautics. The question now is, how long we must wait for air law to protect the public and passengers and the man who invests his capital in the industry.

Outdoor Winter Sports in Minneapolis

Activities of the Women's Winter Sports Association

By Dorothea Nelson

Director, Girls' Municipal Athletics, Recreation Department, Board of Park Commissioners, Minneapolis, Minn.

OUTDOOR winter sports play a big part in the recreation program of the city of Minneapolis. Winter enthusiasts almost live out-of-doors, as there is a great deal of snow and usually moderate weather, and a great number of natural facilities, such as lakes, hills, etc.

The activities conducted are: big ice carnivals, held in the various sections of the city; ski tournaments, conducted under the auspices of the Municipal Ski Club; dog Derby races; skating races, under auspices of the Municipal Skating Club; horse races on the track at the Lake of the Isles; ice boat races; cross-country ski hikes; a Hockey League of thirty teams, conducted on four electric-lighted rinks; and the usual general informal skating and tobogganing. Thirty-two skating-rinks are conducted and a number of toboggan hills maintained. The National Ski Tournament will be held in Minneapolis on February 10 and 11, 1923, and the best skiers in the country are expected to be present.

Last year a new organization was added to our extensive winter sports program—the Women's Winter Sports Association. The Association started with seven members and now has more than a hundred. Its purpose is to encourage, teach and stimulate winter sports among girls and women, and it serves as a vehicle to many who would not otherwise get out. The membership fee of 25 cents a year is so small that it cannot prevent anyone from joining. The Association is advertised through the newspapers and our other activities, and it is fully understood that it is open to any girl

AT THE BOTTOM OF THE HILL
Toboggan party, Glenwood Park, Minneapolis

CHAMPIONS IN THE SKI TOURNAMENT, MINNEAPOLIS, FEBRUARY, 1922

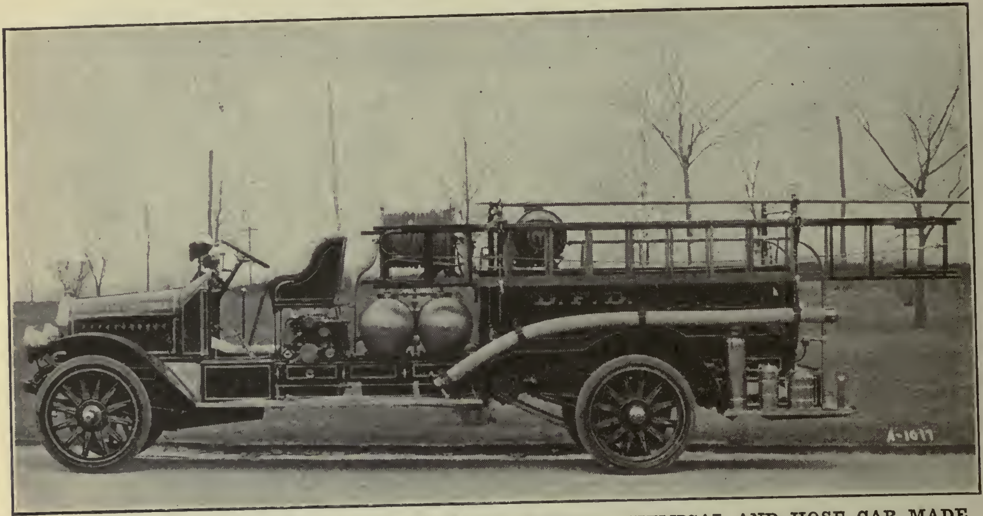
or woman in the city who wishes to join.

The Association is divided into four sections, the vice-presidents acting as heads of sections—skiing, speed and figure skating, hiking, and tobogganing. Tuesday and Thursday evenings and Sunday mornings are set aside on the figure skating rink at Loring Park for members desiring to improve themselves in this line of sport. Volunteers from the Municipal Figure Skating Club teach the girls the fancy steps on the ice. On Monday evenings, Johnny Johnson, former World's Champion speed skater, gives his services at the Lake of the Isles on the speed skating track, and those interested in speed and distance skating are urged to take advantage of his instruction.

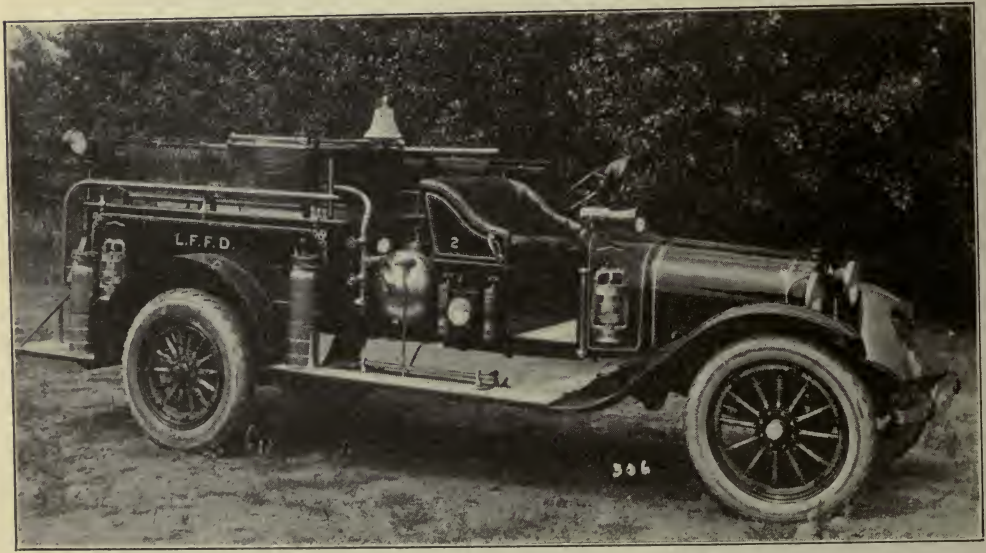
Skiing has proved to be a great drawing card, and Saturday and Sunday afternoons it is a very common sight to see groups of girls in caps and sweaters going through town on their way to Glenwood Park, where most of the ski enthusiasts meet. There is a large ski slide at this park, and the expert skiers that jump here are willing and anxious to teach the girls the sport. The Association had two hockey teams last winter, and although the game is new, we hope soon to form a Girls' Hockey League.

The social side of the Association is developed through toboggan and hiking parties. Many girls who have long wanted to do these stunts have found an opportunity and also congenial associations. A winter sports dance was given to raise money to buy toboggans. Five large toboggans were purchased and have been in use continually throughout the winter. The girls often have wiener roasts at the slide or come downtown in a group and end up at "Childs" or some similar place. The hiking groups of the Association have come right into the Municipal Hiking Club, which conducts a hike every Saturday afternoon and one or two moonlight hikes a month. The average attendance on these hikes is 150. At the last carnival conducted by the Recreation Department of the Board of Park Commissioners the W. W. S. A. put on a tug of war, a baseball game on ice, called the "Eskimo Ball," and a very clever winter circus. The W. W. S. A. is a member of the Girls' Municipal Athletic Association, which includes girls' bowling leagues, basket-ball leagues, kittenball leagues, horseshoe clubs, volley ball leagues, etc.

Modern Fire-Fighting and Service Units in American Cities



A 300-GALLON TRIPLE COMBINATION PUMPING ENGINE, CHEMICAL AND HOSE CAR MADE BY THE INTERNATIONAL MOTOR COMPANY, NEW YORK CITY, AND RECENTLY PUT INTO SERVICE BY THE DARIEN, CONN., FIRE DEPARTMENT



A SINGLE-TANK FOAMITE-CHILDS COMBINATION CHEMICAL ENGINE AND HOSE CAR MOUNTED ON A DODGE-GRAHAM 1½-TON CHASSIS, USED BY THE CITY OF LITTLE FALLS, NEW YORK

This machine has a steel hose body with slatted wood bottom of the ventilating type, capable of holding 1,000 feet of hose. A Childs 40-gallon polished copper chemical tank complete with special acid-sealing valve and agitators and polished brass piping, is carried. Also 250 feet of ¾-inch, 4-ply standard fire department hose and one ¾-inch shut-off nozzle are carried. The novel equipment of this machine also includes one extra acid bottle for the chemical tank, one polished brass soda canister for carrying the extra charge, one 12-foot roof ladder with folding hooks, one 24-foot rope hoist extension ladder, one 11-inch enamel-trimmed electric search-light, one electric spot-light mounted on the rear standard, four Dietz polished brass fire department type lanterns, two hand electric search-lights, one 10-inch polished brass locomotive bell, one polished brass siren horn and two fire department type extinguishers, two 6-pound pick-head fire department axes, one door opener, one cellar pipe, one 10-foot pike pole and four play-pipe holders, mounted on the rear foot-board

A GMC TRUCK USED IN STREET WORK IN POMONA, CALIF.
An increasing number of cities are appreciating the value of the motor truck in all kinds of hauling for the various municipal departments

A GROUP OF POLICE MOTOR-CYCLES IN REVIEW BEFORE THE ROYAL PALACE AT MADRID, SPAIN
Harley-Davidson motor-cycles are also used by the Health Department, the Military Administration, the Mail and Telegraph Department, and the Civil Guard

Chamber of Commerce Activities in Public Affairs

A Community Score Card

MORGANTOWN, W. VA.—With the coöperation of the Extension Committee of West Virginia University, the Morgantown Chamber of Commerce has issued a "Community Score Card" in the form of a twelve-page booklet. Under ten main headings and fifty subheads committees of citizens are asked to indicate how nearly Morgantown is living up to 100 per cent of its possibilities.

At a membership meeting on October 30, at which this project was presented, we had an attendance of 500 members out of a possible 580.

The entire community is interested, and every member of the Chamber has been assigned to a committee. Five committee meetings on a single day resulted in the attendance of 85 per cent of the Committee.

Upon completion of the scoring, the committees will study how to improve those things in which Morgantown does not compare favorably with other cities.

THOMAS F. BURLEY, JR.,
Secretary-Manager, Morgantown Chamber of Commerce.

Working for a Paid Fire Department

HARRISBURG, PA.—To continue the largely volunteer fire department is unfair to the volunteers who risk life and limb without remuneration, and unfair to the approximately 100,000 people who are largely dependent upon volunteer service for fire protection, in the opinion of a special committee of the Harrisburg Chamber of Commerce.

One of the few cities of importance in the East to retain in such predominance the volunteer system, Harrisburg has but 30 paid drivers and 1,500 on the volunteer roster. There are 15 stations, motorized apparatus, a modern alarm system and a splendid water-supply, but no system of training and no permanent executive officers except the chief. A rearrangement of stations, with elimination of four or five, more efficient distribution of apparatus, and about 90 paid men, were recommended by the National Board of Fire Underwriters, which the Harrisburg Chamber invited to make a survey.

The Harrisburg Chamber was committed to the effort to procure a paid department through its program of work which had been secured at group meetings, and through a referendum vote of the membership. The committee immediately obtained information from other places, inspected local fire stations, consulted with authorities, visited other cities of similar size to see the operation of fully paid fire forces, and became convinced that Harrisburg should have a paid department.

The conclusions of the committee were presented to the City Council in writing and by conferences, two of which have been held. The Council, while indicating agreement with the committee, declares that for the present the cost would be prohibitive. The committee argues that the sale of the stations to be eliminated would provide some revenue for the first year. The Commissioner in charge of fire says that many of the recommendations as to training, inspection and the like will be adopted forthwith by the department.

In its report the committee paid tribute to the heroism and self-sacrifice of the volunteers, but declared that in a city the size of Harrisburg the fire force should be composed of men whose only business is fire fighting and that they should be trained in their profession. The importance of having these men on the job the minute the fire is discovered was stressed. The committee believes that with captains and lieutenants in the various companies the water loss would be reduced. With 1,500 men, should all be working, there is insufficient supervision.

"The time and location of fires cannot be prophesied," the report states, "but there is always a probability that one fire might follow another under conditions of danger, strife and stress, and it would be only human should a number of active men engaged in other occupations fail to respond to the successive calls, which would then force tired, undermanned companies to combat under serious difficulties what might be a potential conflagration."

The report also states that volunteers have no recourse in case of injury, but recommends that the social features of the volunteer department be not abandoned. The police and fire departments are compared as safety units, and it is shown that only half as much is being spent for fire as for police, whereas in the average city the costs are fairly comparable.

At a recent conference with the City Council, the Mayor brought out the fact that Harrisburg has almost every other necessary civic element for a modern city except a paid fire department. The Commissioners agreed that they all favored its establishment and that the only hold-up for the present is a matter of finance.

"Many cities have waited for a crisis and then plunged headlong into a paid department," says Chairman Robert McCormick of the Chamber committee. "It is better to start now."

DANIEL L. CASEY,
Secretary, Harrisburg Chamber of Commerce.

Klamath Falls Playground Financed by Chamber of Commerce

Klamath Falls, Ore.—The most popular single activity of the Klamath County Chamber of Commerce this year has been its leadership in the financing and equipping of a public playground. The development of the Chamber's program of work showed that many of the leading citizens of Klamath Falls realized the need for a well-equipped play space for the children, and a special committee was therefore appointed to raise the necessary funds. It was decided not to "pass the hat" among the merchants. Letters were sent to all the civic, fraternal and other organizations of the community asking them to contribute to the fund as they saw fit. A splendid response followed, in which the women's organizations were represented 100 per cent. There still remained a small deficit, and a "back-to-nature" ball game was staged, the players being selected from bank presidents, heads of department stores, retired business men and other "athletic has-beens." They were attired in burlesque costumes, and a big parade preceded the performance. All the stores were closed at 4 p. m. The ticket sales netted about $250—enough to complete the fund.

In deciding upon the equipment to be purchased, letters were written to several advertisers in The American City, and the order was subsequently placed with the Fred Medart Manufacturing Company of St. Louis for the following apparatus:

Portable slide, 24 feet
Set six swings and frame fittings
Horizontal ladder
Parallel bar
Giant stride—six ladders with pipe upright
Set of four seesaw boards and frame fittings
Set of six traveling rings and frame fittings
Horizontal bar

Klamath Falls now has one of the finest playgrounds in the state.

T. A. STEVENSON,
Secretary, Klamath County Chamber of Commerce.

THE CHILDREN OF KLAMATH FALLS APPRECIATE THEIR PLAYGROUND

Texarkana Chamber No Sluggard in Going After the Ant

Texarkana, Ark.-Tex.—One morning late last month a response to the telephone in the Texarkana Chamber of Commerce revealed the information by word of mouth from a housewife that the ants were unusually bad on her premises and those of her neighbors. The narrative bore the marks of something to it, and the result to the lady was the promise that the cases would be investigated. They were, and in a short time George C. Becker, entomologist for the state of Arkansas, was on the ground investigating.

Argentine ants, one of the worst infestations noted in the Gulf and Southwestern States, was Entomologist Becker's verdict. With assistants he began and concluded a thorough survey of Texarkana, both sides of the state line, the imaginary boundary of Arkansas and Texas, and his resultant survey map showed approximately 100 blocks of infested area.

Now the Argentine ant has the reputation of being a bad actor, such as causing the death of babies, and rendering poultry raising impossible, when he has secured a hold; colonies of bees are destroyed by them, and tree diseases and plant maladies propagated.

The published report of the survey caused the citizens to become anxious. Texarkana's Chamber of Commerce, always ready for community uplift and succor, was quick to act. A group of volunteer workers were called into conference with Entomologist Becker, and his recommendations and plan for an ant eradication campaign were heard and acted upon. The infected areas were assigned by blocks to resident solicitors for funds with which to buy government formula poison and to pay for the labor of applying it. The quota of funds was set at $1,000, and contributions were secured in order that the poison squads could be at work before the Argentine ants went into winter quarters, too late for extermination this year.

This is but one of the many instances wherein the comfort of the community becomes the subject of appeal to the Chamber of Commerce for assurance; and it indicates the dependence which the citizenry feels when a time of stress arrives.

M. E. MELTON,
Chamber of Commerce.

An Inter-Community Visitation

Greeley-Boulder, Colo.—A plan for an inter-community visitation drawn up by the University of Colorado Extension Division was submitted to the Chambers of Commerce of Boulder and Greeley. The idea appealed to these organizations, and the program was successfully carried out under their auspices.

On May 10, 94 representative citizens of Boulder in 22 autos, each decorated with a large banner bearing the words "Inter-Community Visitation," drove to Greeley, 60 miles distant, getting there in time for luncheon. At that luncheon there were present as hosts 217 Greeley citizens; making a total of 311, the maximum capacity of the dining-room. The President of the Greeley Chamber of Commerce called the meeting to order and was the presiding officer during the first part of the luncheon. Spirited community singing led by "peppy" leaders was an impressive feature.

As soon as the last course was served, the President of the Greeley Chamber of Commerce turned the meeting over to the President of the Boulder Chamber of Commerce, who then presented the Boulder speakers. These speakers gave ten-minute reports regarding Boulder, on each of the following subjects:

(1) Commercial Interests; (2) Health and Sanitation; (3) Education; (4) Recreation; (5) Attractiveness; (6) Community Spirit, as indicated by various community activities. Subtopics under each of these subjects were definitely outlined, and a copy had been given to each speaker so as to specify the scope of each report.

After presenting these reports, the luncheon meeting was adjourned and the Boulder people, together with a number of Greeley people, boarded automobiles to begin a city-wide tour of Greeley and make a friendly inspection of its streets, buildings, homes, parkings, parks and institutions. A definite itinerary covering the city was printed in the program. Upon the completion of the tour of inspection the 22 Boulder cars started on the return trip to Boulder.

On the following day 95 Greeley persons in 22 autos made the trip to Boulder, getting there in time for luncheon. At Boulder the same plan was followed that had been carried out in Greeley. The President of the Boulder Chamber of Commerce presided during the preliminaries and then turned the meeting over to the President of the Greeley Chamber of Commerce, who in turn presented his sextet of Greeley orators. The Greeley speakers eloquently presented information concerning their city along the same six lines and according to the same outlines that had been followed for Greeley.

After this luncheon the Greeley citizens, accompanied by many Boulder people, made a two-hour city-wide tour of Boulder. The itinerary in Boulder, as in Greeley, had been carefully worked out in advance and was printed in the program. Naturally, many of the places could simply be pointed out in passing; but brief stops were made at a few designated places, such as the community rest room, the children's free ward in the Community Hospital, and the unique auto camp ground where, among other things, there are provided free for tourists hot and cold showers, the use of built-in laundry tubs, and gas stoves in a community kitchen and dining-room.

In the program with which each person was supplied there were printed comparative statistics of the two cities. These statistics covered, in part, population, assessed valuation, tax rate, bonded indebtedness, average annual fire loss, miles of paving, gas-mains, number of hospitals, schools, churches, banks and business establishments.

Further, there were printed in the program four aspirations of each of the two cities. To quote only the first aspiration of each group:

Greeley: To make a "city beautiful" that will attract the highest type of resident citizens.

Boulder: To treat its visitors in a most friendly manner and build up a community spirit the best possible for fostering high ideals.

These two cities were chosen for such an inter-community visitation because they are of practically the same size and have many of the same interests. Each has a population of slightly over 11,000, each is the seat of a state educational institution, and each has a large tourist trade during the summer. Thus the two cities could be compared on the same basis.

As to results, enough time has not yet elapsed to show what they are. The citizens from the one city which is blessed with a naturally beautiful location were impressed with the smoothness and cleanliness of the unpaved streets of the other. A number of people from the first city realize more fully the need for improvement in their own community in the matter of cleaner streets and yards. The representatives from the city where there is no paving were impressed with the 5½ miles of paving in the other, and the ambitious program for 40 more blocks of paving during the coming summer. The representatives from both communities realize that there are some things in their own communities concerning which they no longer boast. On the other hand, they found many things in each community to be emulated by the other.

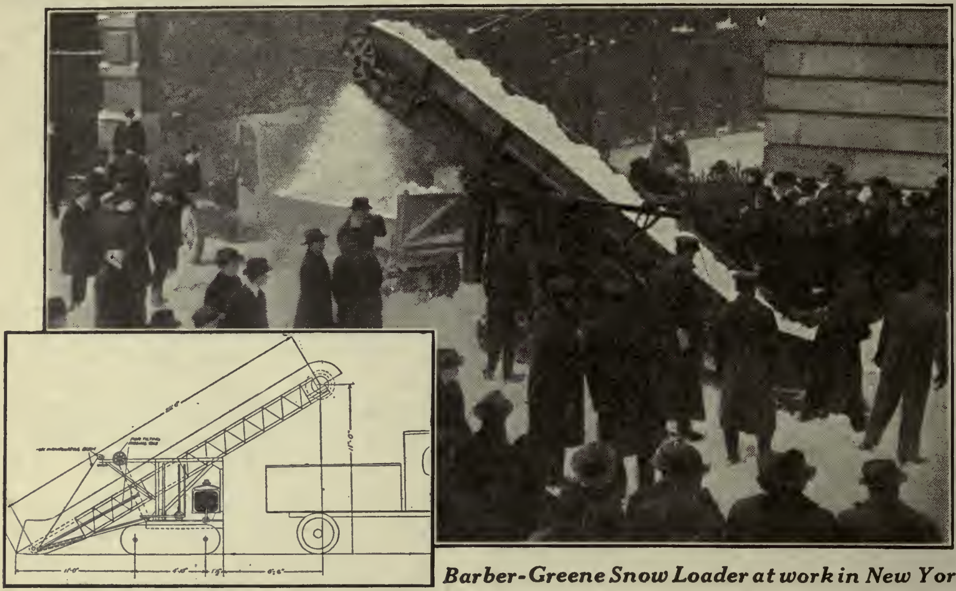
CHARLES I. MADISON,
University Extension Division, University of Colorado.

A Municipally Supported Board of City Development

PLAINVIEW, TEXAS.—Like other small towns, Plainview struggled for many years with a Chamber of Commerce supported by voluntary contributions from a few public-spirited citizens. Public interest would be aroused; subscriptions would be made, sufficient to employ a good commercial secretary; his work would prove satisfactory, and visions of a large and growing commercial center would appear upon the horizon of the community. Then would come one of those business depressions, the experience of all towns; subscriptions to the Chamber would drop off, and at a time when the assistance of a commercial secretary was most needed the town would be without such assistance.

Some four years ago the occasion presented itself to Plainview to get away from such a state of affairs. Under a law which had recently been enacted by the State Legislature, permission was given to towns of 5,000 or more to elect a commission of fifteen to write a city charter, this to be submitted to the voters of the city for acceptance or rejection. Plainview took advantage of this act, and in the charter thus prepared the following section was included:

> Section 187. The city council shall have the authority to appoint what shall be designated as a "Board of City Development," or what-



Barber-Greene Snow Loader at work in New York

Fighting Snow Cheaply and Fast

Saving $450 Per Eight-Hour Shift With a Barber-Greene Snow Loader

In the cities where snow-fighting is thoroughly planned, Barber-Greene Snow Loaders are relied upon to do the work of sixty shovelers.

In Chicago the Superintendent of Streets credits each one with a direct saving of $450 per eight-hour shift as compared with shoveling from piles into trucks.

It also effects a considerable saving in motor truck costs because it loads 8-yard trucks in 2½ minutes where 20 minutes are required for hand loading.

Quite as important is the rapidity with which the snow is removed and normal traffic restored.

The most efficient method of removal is to plow the snow into windrows at the curb, loading from these with the Barber-Greene.

Where it is desired to leave snow for sleighs, the adjustable scoop is set to leave as much snow as is desired.

The Barber-Greene is the first practical snow loader. It is used in New York, Chicago, Philadelphia, Boston, and Pittsburgh.

Its success is due to its design and to the fact that it is the product of a company that has for years specialized in material handling equipment and has spent three years in perfecting the present model.

The new Model F not only handles snow, but by means of a bucket boom can be converted into a bucket loader in summer time for loading sand, gravel, and the like.

Details about its work, performance, and construction will be freely furnished on request.

Barber-Greene Company
Aurora, Illinois

Branch Offices in
33 Cities

B
STANDARDIZED
MATERIAL-HANDLING
MACHINES
G

BARBER-GREENE
SNOW LOADERS

ever name the city council may choose, which shall be composed of not exceeding fifteen members, who shall serve without compensation, and the city council may prescribe the qualifications and duties of such Board or organization and their term of office, and may appropriate annually, not exceeding two mills on the one dollar valuation of the taxable property in the city of Plainview, from the general fund of said city to support the work of said Board; which Board shall have authority, under the direction of the council, to expend the money appropriated for its use for the general upbuilding and development of the city.

This charter was adopted by an overwhelming vote. As Section 187 was a new departure in charters, it was submitted as a separate proposition. It was carried with very few votes against it.

The first year a board of fifteen members was appointed by the city council. This number did not seem to give satisfaction, so the council cut the number to eight, since which time the attendance has been practically 100 per cent.

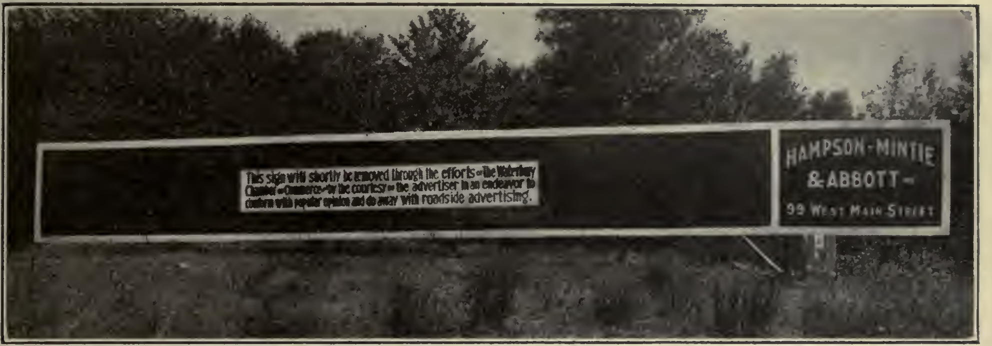
The work is divided into six departments, as follows: Transportation, Agriculture, Entertainment, Publicity, Commerce, and Civic Improvements. To each department is assigned a member who is known as the director of that department. Each director selects from among the citizens a committee of five to assist him in his duties. These committeemen are selected for their particular qualifications for the duties required of them, and to each is assigned some particular subdivision of that department. The meetings of the Board are held twice a month, when each director makes a report of the activities of his department. The secretary of the Board makes monthly reports to the City Council and also gives an itemized statement of expenditures.

It is excellent team work. If an extraordinary occasion should demand it, any department could easily expand for the occasion. If an extra large convention should be held in the town, each member of the entertainment committee would become the chairman of a subcommittee, while the director would become general chairman of all the committees of his department.

R. P. SMYTH,
Director, Transportation, Board of City Development.

Removing Objectionable Roadside Advertising

WATERBURY, CONN.—The campaign against roadside advertising has resulted in the removal, in Waterbury and vicinity during the last few months, of over fifty signs nailed to trees or otherwise placed so as to bring objections.


This sign will shortly be removed through the efforts of the Waterbury Chamber of Commerce by the courtesy of the advertiser in an endeavor to conform with popular opinion and do away with roadside advertising.
HAMPSON-MINTIE
& ABBOTT
99 WEST MAIN STREET

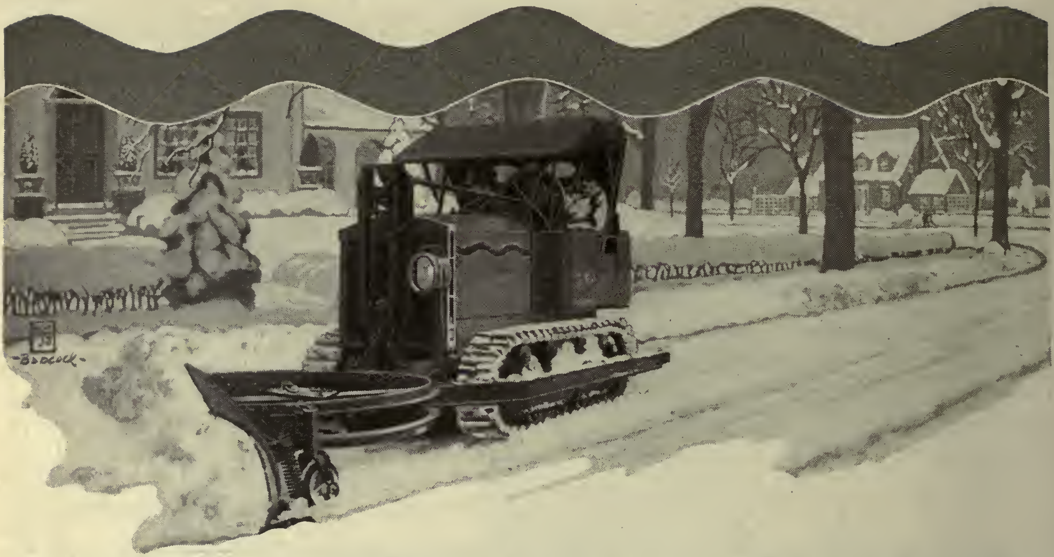
THE SIGN ON A SIGN, WATERBURY, CONN.

A recent achievement has attracted much attention from automobilists and pedestrians passing along East Main Street. A new church is being erected across the street from a 70-foot bill-board which had been carrying the advertisement of a local dealer in stoves and ranges. The Chamber of Commerce interested itself in the situation, and the "sign on a sign," here reproduced, is the result. This reads as follows:

> This sign will shortly be removed through the efforts of the Waterbury Chamber of Commerce and by the courtesy of the advertiser, in an endeavor to conform with popular opinion and do away with roadside advertising.

The sign has brought favorable comment to the Chamber of Commerce for a good piece of work, and to the stove people for their public-spirited action.

ROBERT J. EUSTACE,
Assistant Secretary, Waterbury Chamber of Commerce.



Breaking the Snow Blockade

The "Caterpillar's" field of usefulness is by no means limited to snow removal. There is a "Caterpillar"* of size and capacity for every power need. For grading and maintaining streets and roads, for work on farm or ranch, in the mining, oil and lumber industries — wherever tractive power and endurance are at a premium, the "Caterpillar"* has no real competitor.*

Leaving sixteen states in its wake the big blizzard of last January struck New York City and New England with staggering force. New York was ready! So were many adjoining "Caterpillar"*-equipped cities and towns. Repeating the performance of the previous winter, New York's fleet of 50 "Caterpillars,"* fitted with big snowplows, cut great furrows through the snow-blanketed streets and kept traffic moving. Three "Caterpillars"* put into action on the hilly streets of Yonkers quickly cleared its business and residential districts. Rye, Mamaroneck, and Harrison did equally effective work with their "Caterpillars"* and kept open sections of the Boston Post Road, one of the vital arteries of motor traffic into Manhattan. Every community owning "Caterpillars"* is protected against the traffic tie-ups and the increased fire hazards of snow-bound thoroughfares. Because of their sure footing and unfailing power, "Caterpillars"* will buck the deepest drifts and clear the snow faster and cheaper than any other method. They can be kept busy the year round grading and maintaining streets and roads. Let us show you our motion pictures of "Caterpillars"* plowing snow-blocked roads.

** There is but one "Caterpillar"—Holt builds it. The name was originated by this Company, and is our exclusive trade-mark registered in the U. S. Patent Office and in practically every country of the world.*

CATERPILLAR
Reg.U.S. Pat.Off.
HOLT
PEORIA, ILL.
STOCKTON, CALIF.

THE HOLT MFG. CO., *Inc.*, PEORIA, ILL.

Branches and service stations all over the world

Eastern Division: 50 Church St., New York

Omaha, Neb.
Kansas City, Mo.
St. Louis, Mo.
Chicago, Ill.
Holt Company of Texas,
Dallas, Texas.

Des Moines, Iowa.
Minneapolis, Minn.
Indinanapolis, Ind.
Canadian Holt Company, Ltd.,
Montreal.

Some November Election Results

An attempt to abolish commission-manager government in Dayton, Ohio, by charter amendment was defeated by a large majority.

State highway bond issues were authorized to the extent of $40,000,000 in New Jersey and $6,000,000 in Colorado.

Baltimore took two important forward steps in the adoption of the one-branch city council referendum, and in the approval of a $15,000,000 school construction loan.

The proposal for state and municipal development of California's hydroelectric and water resources, with authorization of bonds up to $500,000,000 as needed for the work, was defeated by more than two to one majority.

A county bond issue of $400,000 for a new parkway was authorized in Essex County, N. J.

Bonds aggregating $285,000 were approved in Harrisburg, Pa., for sewer extensions, street paving, and the construction of a municipal incinerating plant.

In New Orleans the Public Belt $5,000,000 bond issue carried, but the $2,000,000 municipal auditorium project was defeated.

A two-platoon system for firemen was approved in Montclair, N. J., by a vote of more than two to one.

The Alabama Seaport Amendment was adopted, authorizing an issue of $10,000,000 of bonds for the development of the Port of Mobile.

Oregon adopted a new law requiring children between the ages of eight and sixteen years to attend public schools, except that those physically incapable, those who have completed the eighth grade, and those who live at inconvenient distances from schools or are taught by parents or private teachers are exempt. These, however, must have their education supervised by the state.

A municipal home rule amendment to the state constitution was adopted in Pennsylvania.

A memorial auditorium and a tuberculosis hospital, costing $750,000 each, were approved by the voters of Louisville, Ky.

State censorship of motion pictures was rejected in Massachusetts.

An attempt in Washington to prohibit the physical examination of school children, except with the parents' consent, was lost.

Sewer bonds were approved in Akron, Ohio, to the amount of $3,000,000, and in Pottstown, Pa., to the amount of $250,000.

Rawlins, Wyo., is to issue $490,000 of water improvement bonds as a result of the November election.

Erie, Pa., voted $250,000 for grade-crossing elimination and $668,000 for sewers and sewage disposal.

Memorial hospital bonds to the amount of $100,000 were approved by the voters of Chippewa County, Mich.

Sewer and street car bonds to the amount of $960,000 were voted in Ashtabula, Ohio.

St. Paul's proposed bond issue of $5,000,000 for new schools was carried by a three-to-one vote.

On the Calendar of Conventions

December 14-15.—Evanston, Ill.
Illinois Municipal League. Annual meeting. Secretary, R. M. Story, Urbana, Ill.

January 15-19.—Chicago, Ill.
American Road Builders' Association. Annual convention. Secretary, E. L. Powers, 37 West 39th Street, New York, N. Y.

January 17-18.—New York, N. Y.
American Society of Civil Engineers. Annual meeting. Secretary, John H. Dunlap, 33 West 39th Street, New York, N. Y.

January 18-20.—Chicago, Ill.
American Concrete Pipe Association. Annual convention. Secretary, M. L. Loving, 111 West Washington Street, Chicago, Ill.

February 8.—Atlanta, Ga.
Georgia Commercial Secretaries Association. Annual convention. Secretary, Ruth Steed, Atlanta, Ga.

May 21-25.—Detroit, Mich.
American Water Works Association. Annual convention. Secretary, J. M. Diven, 153 West 71st street, New York, N. Y.

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The Value of Sanitary Districts

Solving Problem of Debt Limit in the Construction of Sewerage and Sewage Treatment Works

By W. M. Olson
Department of Public Health, Springfield, Ill.

THE Sanitary District, as developed in the state of Illinois, is a municipal corporation with taxing and bonding powers. It may include within its boundaries all or part of one or more previously incorporated municipalities together with some outlying rural territory.* The primary purpose of sanitary districts is to provide for sewage disposal.

How the Sewerage Problem Developed

The problem of sewage disposal is one of the many problems created by the great and increasing concentration of population in cities during the last thirty years. Early in the nineteenth century, when the most important cities of this country were comparatively small and when practically all of these cities were located on large streams or on large bodies of water, the sewage of each community was permitted, as a matter of course, to flow into the nearest stream or body of water. This method of getting rid of the sewage was in most cases not particularly objectionable. In fact, in many cases the amount of diluting water available was sufficient to permit natural processes of purification to take place without the creation of any nuisance. In other words, many cities had, knowingly or unknowingly, adopted dilution as the means of ultimate disposal of their sewage and were getting satisfactory results.

The development of the steam railroad and of the steam power-plant made possible the great growth of cities previously mentioned and at the same time made it possible for large cities to grow up at a distance from streams of any size. This created an entirely new state of affairs. These great and growing cities provided themselves with ample water-supplies as a matter of immediate necessity. Works for the collection of this water-supply after use were also constructed. This collected sewage was concentrated in large volumes at a few points. In many cases the nearest stream or body of water was too small to provide natural purification. The need for controlled, scientific treatment of sewage was fully developed.

THE FINANCIAL REASON FOR SANITARY DISTRICTS

In practically all American cities the construction of sewerage works and the preparation of sewage for final disposal has been accepted as a public function. The cost of construction of ordinary sewerage works has generally been met by special assessment. Sewage disposal works, on account of the general and indeterminate nature of the benefit rendered, cannot be paid for by special assessment. The first cost of sewage treatment works is usually high. Permanent works such as these would, and should, be paid for by bonds.

The constitution of the state of Illinois limits the total bonded indebtedness of any municipality to 5 per cent of the assessed valuation of the property within the municipality. The necessity for sewage disposal works commonly arises after a city has attained a considerable age and has already bonded itself almost up to the limit. Under the constitutional limitation, most Illinois cities are financially incapable of handling large construction. This is the fundamental reason for the creation of sanitary districts with separate taxing and bonding powers. Often it is advantageous for two or more municipalities to provide for sewage treatment at a common plant. This is commonly the case where the sewage is all collected from the same natural drainage area. The sanitary district makes

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* See "Sanitary Districts in Illinois." By G. C. Habermeyer and Edward Bartow, Trans. Ill. State Academy of Science, Vol. XIII, pp. 96-105, 1920.

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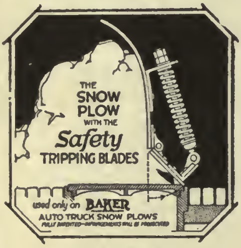
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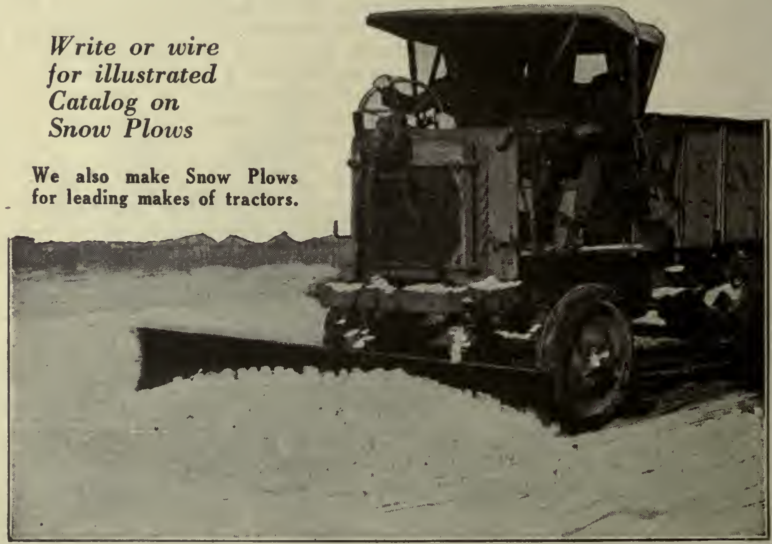

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possible the joint action of several municipalities. The boundaries of the sanitary district may be made to include only that territory best served by a common sewage treatment plant.

The Legislative Authorization in Illinois

The first sanitary districts in Illinois were organized under what practically amounted to special laws. That of Chicago was organized in 1890 under an act of the State Legislature in 1889, providing for the creation of sanitary districts and for the removal of obstructions in the Des Plaines and Illinois Rivers. The primary purpose of the organization of this district was to protect the water-supply of Chicago from pollution by the city's own sewage. The Sanitary District of Chicago, including an area of 436 square miles and a population of about 3,000,000, is the largest sanitary district in the world. The area of this district is about twice that of the city of Chicago and almost half that of Cook County. It has expended enormous sums of money on permanent construction work. The main drainage channel alone cost $24,000,000. The governing body of this district is a board of nine trustees, popularly elected, which exercises all powers of the district. The corporation is permitted to borrow money for corporate purposes up to 3 per cent of the assessed valuation of the property within the district. Taxes may be levied up to ⅔ of 1 per cent of the assessed valuation.

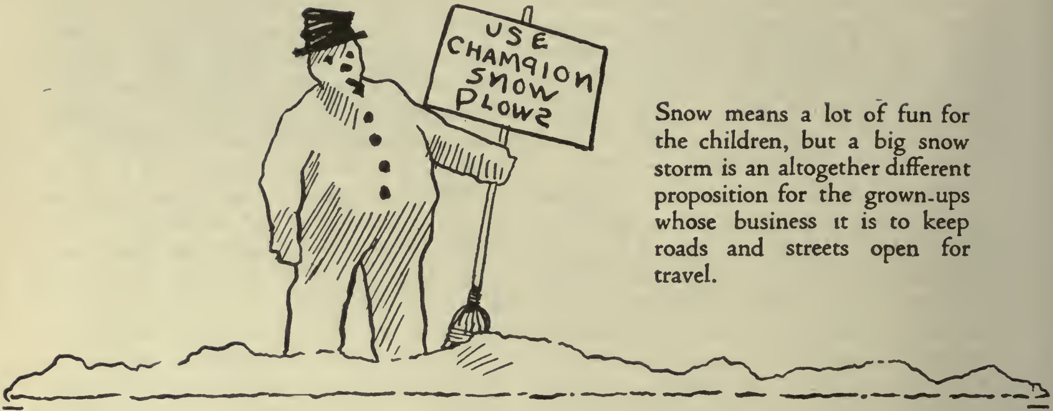
The East Side Levee and Sanitary District was organized in 1908, under an act of 1907 to create sanitary districts in certain localities and to drain and protect them from overflow for sanitary purposes. This district lies partly in St. Clair County and partly in Madison County and includes the municipalities of East St. Louis, Granite City and Brooklyn and part of the municipalities of Madison and Venice. The area of the district is about 96 square miles, and a population of nearly 92,000 is included. This district was organized for flood protection purposes after the great flood of 1903. The corporate authority of the district is vested in a board of five trustees elected for four years by the voters of the district.

The North Shore Sanitary District was organized in April, 1914, under an act of 1911 to create sanitary districts and to provide for sewage disposal. This district is in Lake County. It consists of a strip of territory about 20 miles in length along Lake Michigan, and from 1¼ to 3 miles wide in an east-and-west direction. Its south boundary is that of Lake County, and on the north it is bounded by the north boundary of the municipality of Waukegan. The municipalities of Highland Park, Highwood, Lake Forest, North Chicago, Waukegan and Lake Bluff and the Federal posts of Fort Sheridan and Great Lakes are included in the district. This district includes an area of nearly 25 square miles and a population of about 42,000. The governing body of the district is a board of five trustees appointed for five years by a board of commissioners consisting of the county judge and two circuit judges of the judicial district in which the sanitary district is located. Each trustee represents one particular ward of the five into which the district is divided.

Districts organized since the three just noted have been organized under a law of general application, passed by the Fiftieth General Assembly in 1917. This law bears the same title as that law under which the North Shore Sanitary District was organized, namely, "An act to create sanitary districts and to provide for sewage disposal." It provides that whenever any area of contiguous territory containing all or parts of one or more incorporated cities, towns or villages is so situated that the construction and maintenance of a plant or plants for the purification and treatment of sewage and the maintenance of a common outlet thereof, will conduce to the preservation of the public health, the same may be incorporated as a sanitary district under this Act. Territory to be included must be within the limits of a city, incorporated town or village, or within three miles outside thereof.

Organization

The steps in the organization of a sanitary district are as follows: Any one hundred legal voters, resident within the limits of such proposed sanitary district, may petition the county judge of the county in which the proposed district, or the major portion thereof, is located, to cause the question to be submitted to the legal voters



Snow means a lot of fun for the children, but a big snow storm is an altogether different proposition for the grown-ups whose business it is to keep roads and streets open for travel.

There was a time—not long since—when the cost of moving snow from public highways by hand labor, the only method then known, was practically prohibitive. To-day a snow storm need not be a nightmare to road and street officials, because the Champion Snow Plow, attached to a motor truck or tractor, will quickly and easily clear snow from highways at small expense.

The Champion Snow Plow which has successfully met the test of of time and service, can be readily attached to any standard make of truck or tractor. It consists of a steel scraper blade which is hung on a semi-circular steel frame, providing angular adjustment, permitting either right or left hand cutting.

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of such proposed district whether such proposed territory shall be organized as a sanitary district under this Act. Upon the filing of such petition in the office of the County Clerk, it becomes the duty of the county judge to call to his assistance two judges of the Circuit Court. These three judges constitute a board of commissioners with power to determine the boundaries of the district.

The board of commissioners meets at such a time and place as is advertised in a public notice published at least twenty days previously. At this meeting all persons in such proposed district shall have an opportunity to be heard and to make suggestions regarding the location and boundary of such proposed district. After the hearing the board of commissioners fixes the boundaries of the district, and these boundaries are incorporated in an order spread at length upon the records of the County Court. Within sixty days after the entering of this order an election is held upon the question of the incorporation of the proposed sanitary district. Notice of this election must be given twenty days prior thereto. If a majority of the votes cast upon the question of incorporation shall be in favor of the proposed sanitary district, such proposed district is thenceforth deemed an organized district under the terms of this Act.

The government, control and management of the sanitary district are in the hands of a board of three trustees appointed by the county judge. The board of trustees exercises all the powers of the district. It has full power to pass all necessary ordinances for the proper conduct of the business of the corporation. The board of trustees has power to provide for the disposal of the sewage of the district and to preserve the water supplied to the inhabitants of such district from contamination. The trustees do not have power to flow sewage into Lake Michigan.

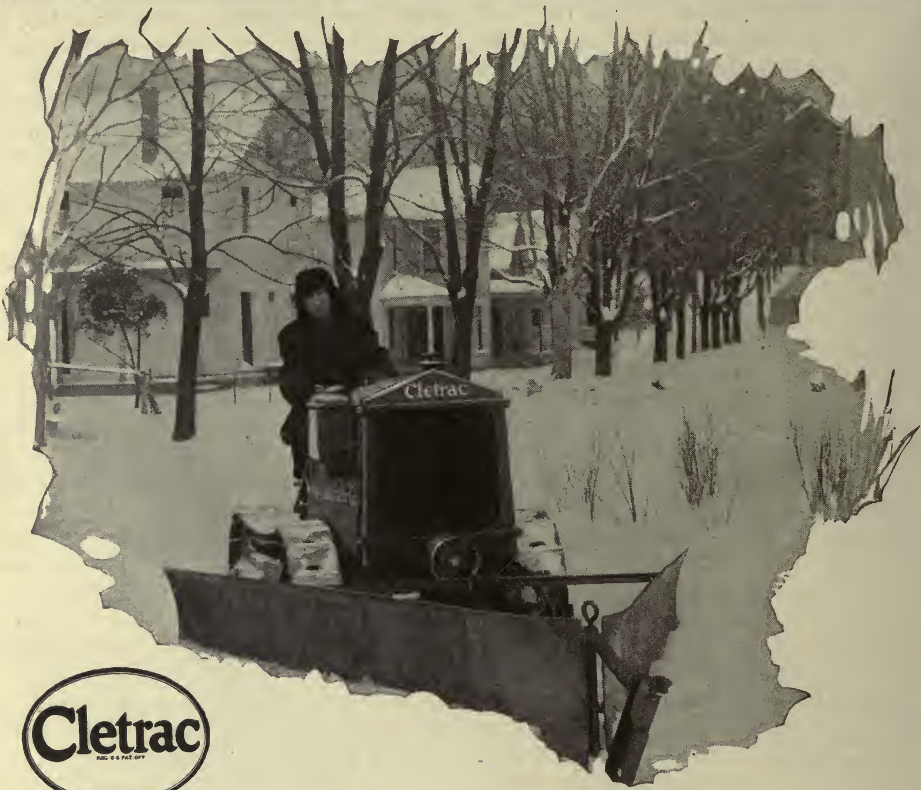
Powers

The sanitary district may acquire by purchase, condemnation, or otherwise all real and personal property, right of way and privilege, either within or without its corporate limits, that may be required for its corporate purposes. The corporation may borrow money for corporate purposes by the issue of bonds, but shall not become indebted to an amount in the aggregate to exceed 5 per cent on the valuation of taxable property therein as ascertained by the last assessment for state and county taxes previous to the incurring of such indebtedness. Before the board of trustees can issue bonds, an election upon the question must be held in the district. At the time of or before incurring any indebtedness, the board of trustees must provide for the collection of a direct annual tax sufficient to pay the interest on such debt as it falls due, and also to pay and discharge the principal thereof as the same shall fall due, and at least within twenty years from the time of contracting the same. All contracts for work to be done by the municipality must be let upon not less than thirty days' public notice to the lowest responsible bidder, if the expense of the work is to exceed $500. The board of trustees may levy and collect other taxes for corporate purposes, the aggregate amount of which for each year shall not exceed ⅓ per cent of the assessed value of the taxable property within the corporate limits. A like sum in addition may be levied when authorized by the voters of the district at an election duly called for that purpose. Any district formed under the terms of this Act has the right to permit territory lying outside its limits to drain into any channel made by it upon such conditions as may be agreed upon. Likewise, any sanitary district has full power to contract for the use of a channel made by any other sanitary district.

The Work of Five Sanitary Districts

This Act provides for the creation of sanitary districts anywhere in the state. That this Act satisfies a real need is shown by the fact that up to date five communities have taken advantage of its provisions.

The first community to take advantage of this Act was Decatur, in Macon County. The Decatur Sanitary District was organized in August, 1917. At an election on February 24, 1918, it was decided to raise the tax rate to ⅔ per cent and to issue bonds to the amount of $860,000. Up to date a large intercepting sewer has been built and construction has been started on a group of Imhoff tanks. A total expenditure of $1,400,000 for sewage disposal works and interceptors is being contemplated. The Sanitary District includes all



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of the city of Decatur, with an area of 6.7 square miles, together with outlying territory to make the area 33 square miles. The population of the district is about 55,000.

The Bloomington and Normal Sanitary District, in McLean County, was petitioned for in August, 1919, and the organization was approved by an election in November, 1919. This district has a population of about 34,000. The Sanitary District includes all of the city of Normal, most of the city of Bloomington and no rural territory. The area of the district is 8.44 square miles. About 160 acres in the south part of Bloomington are not included.

In November, 1920, there was an election on a proposed bond issue of $800,000. The result was a tie vote of 4,221 to 4,221. The official recount confirmed the tie. At an election on December 20, 1921, a proposed bond issue of $400,000 was lost by an enormous majority.

The only funds that have been raised by this Sanitary District are those resulting from the annual tax levy for the years 1920 and 1921, which amounts to about $57,000 for each year. Only a small part of this money has been expended.

The engineers for the Sanitary District have completed detailed plans for an intercepting sewer and trunk sewer extensions, estimated to cost, including right of way, about $214,000. Detailed plans have also been completed for the dredging of the open channel of Sugar Creek within the boundaries of the district for the purpose of relieving the sewers of the flood waters. This work, including right of way, is estimated to cost $86,400. Steps are now being taken by the Trustees of the Sanitary District to secure the right of way for these projects, as well as for the land required for a site for a sewage treatment plant. The engineers are now developing plans for the sewage treatment works.

The Urbana and Champaign Sanitary District, in Champaign County, was organized in the spring of 1921. This district has a population of about 28,000 and includes an area of 8.5 square miles. All of Urbana, most of Champaign, and 2.2 square miles of unincorporated territory are included within the district. This area can find an outlet for its drainage to the east of the two cities. A small area, 0.2 square mile, in the extreme west portion of Champaign, drains to the west and is not included within the Sanitary District.

The Trustees qualified on the 11th of June, 1921. On August 31, 1921, the Treasurer of the Sanitary District was authorized to borrow $2,500, as needed for running expense. On February 8, 1922, a firm of engineers was employed to make a preliminary investigation. These engineers have been working on the local sewage disposal problem and have submitted tentative progress reports. During April, 1922, the Board of Trustees made a trip of inspection to various sewage disposal plants, including those at Fitchburg, Mass., Philadelphia and Baltimore.

The Downers Grove Sanitary District, in Du Page County, was fully organized during the month of April, 1921; $75,000 was raised by a bond issue, bearing 6 per cent interest and payable twenty years after date, and $16,416.66 was raised by general taxation for general expenses and interest on bonded indebtedness. The levying of the latter amount was made possible by a vote of the people of the District authorizing an additional 1/3 per cent to be levied on all of the taxable property in the district for general purposes. The work now under construction consists of a sewage disposal plant, an outlet sewer, and a caretaker's house. The cost of all of this amounts to approximately $75,000. The population of the District is about 5,000. The area of the Downers Grove Sanitary District is about 6 square miles, three-fifths of which is not included within the corporate limits of the village of Downers Grove.

The proposed Sanitary District at Elgin in Kane County was approved by a vote of 480 to 131 at a special election May 9, 1922. This district has a population of about 30,000. All of the area within the corporate limits of Elgin is included, together with about 3 square miles of unincorporated territory to the north and west of the city. A tax levy of 1/3 per cent will raise about $46,000 annually. The cost of the necessary disposal works and trunk lines is roughly estimated at $700,000. By the adoption of adequate sewage treatment the city of Elgin expects to enable itself to insist that other cities and villages cease to contaminate the Fox River with sewage.

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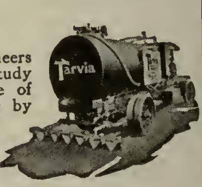

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B. H. M. Hewett, Director, Jacobs & Davies, Inc., New York, consulting engineers, and S. Johannesson, former engineer on the Pennsylvania Railroad Tunnels and for the Interborough Rapid Transit Co., New York. First Edition, McGraw-Hill Book Company, Inc., New York. 1922. X + 465 pp. Illustrations, diagrams and tables. Price $5 postpaid.

A very complete book which brings up to date the art and science of tunneling with the shield, which has been developed to such a point that it is possible now to formulate, to some extent at least, certain principles and rules of practise on which to base the design and construction methods of future work. The book has a rather lengthy general introduction covering the tunnel miner's art, the history of tunneling, and size and shapes of tunnels, and then follow distinctly practical chapters on matters of design, stresses in tunnel linings, linings for shield-driven tunnels, tunnel shields, plant and equipment in tunnel construction, surface plant, maintenance and inspection, progress and cost, and tunnel survey, and an excellent chapter on compressed-air sickness.

CHAMBER OF COMMERCE PRIMER

''Has this been done before?'' This little pamphlet of 19 pages answers this question in regard to the activities of chambers of commerce by referring inquirers to members of the Southern Commercial Secretaries' Association. Each member of the Association has been given a number, and that number has been listed under the activities with which he has had special experience. By looking up the numbers in the list of secretaries included in the pamphlet a seeker for information can find the names of the men who have ''done it.'' Prepared by John Wood, Manager, Charleston Chamber of Commerce, and William Manier, Secretary, Nashville Chamber of Commerce. Published and distributed by the Southern Secretaries' Association. (Apply to A. T. Felt, Secretary-Treasurer of the Association, Alexandria, La.)

VITRIFIED CLAY PIPE JOINTS

''Tests of Jointing Materials for Vitrified Clay Pipe,'' by S. E. Dibble, of the College of Industries, Carnegie Institute of Technology, Pittsburgh, Pa. Also Report of Bureau of Surveys, Philadelphia, Pa. Issued by Clay Products Association, 133 W. Washington Street, Chicago, Ill. Resulting in the statement that ''vitrified clay pipe can be jointed and the joints can stand a pressure of 10 lbs. without showing any leaks provided a compound is used similar to those mentioned in this report.'' 14 pp. illustrated. (Free on application to the publishers.)

THE SANITATION OF BATH HOUSES

A quarto 16-page pamphlet under this title, by Wm. Paul Gerhard, C. E. Reprinted from **Architecture and Building.** Published by The William T. Comstock Company, 23 Warren Street, New York, N. Y. Price 60 cents. 28 illustrations. Material presented under the heads of Types of Public Baths; Sanitary Features of Swimming Pools; The Water Supply and the Purification of Swimming Pool Water; Some Engineering Details of Bath House Illustrations. (Apply to the publishers, or to the author at 17 West 42nd Street, New York, N. Y.)

GARBAGE DESTRUCTION, MONTEVIDEO

Report on Garbage and Refuse Destructor in Operation at Montevideo, Uruguay, South America, made to the Honorable the Common Council of the city of Milwaukee by George F. Staal, City Engineer, September 6, 1922. Investigation made during February and March, 1922, to complete the study of garbage destruction made by a Special Committee appointed by the Common Council. 37 pp. Illustrated. (Apply to the City Engineer.)

AMERICAN INSTITUTE OF PARK EXECUTIVES

Official Proceedings of American Institute of Park Executives and American Park Society, held in Minneapolis, Minn., August 19-23, 1922. Published by **Parks and Recreation,** Minot, N. Dak. 96 pp. Containing interesting addresses and discussion on recreation problems. (Apply to publishers.)

ADEQUATE RANKING AND PARKING FACILITIES

An excellent paper originally read by W. P. Eno before the National Highway Traffic Association, subsequently printed in Motor Travel, published by the Automobile Club of America, 247 West 54th St., New York, and now available in reprint form. It discusses parking of ''live'' and ''dead'' vehicles, general ranking and parking spaces, cab, hack, truck, and sightseeing vehicle stands. (Apply to publishers.)

TEXAS ROADS

''Facing the Texas Highway Crisis: What The Texas Highway Association Is Seeking to Accomplish.'' Setting forth the purpose of this Association ''to obtain the necessary legislation to enable the State Government to cooperate with the Federal Government in constructing a connected state system of highways in Texas and to remove the legal obstacles which stand in the way of full compliance by Texas with the requirements of Federal law in the matter of Federal aid for highway construction.'' 23 pp. (Apply to The Texas Highway Association, Waco, Texas.)

PUBLIC OWNERSHIP OF ELECTRIC UTILITIES

''Refutation of Unjust Statements Contained in a Report Published by the National Electric Light Association, entitled ''Government Owned and Controlled Compared with Privately Owned and Regulated Electric Utilities in Canada and the United States,'' Respecting the Hydro-Electric Power Commission of Ontario.'' 1922. 53 pp. Map. Tables. (Apply to the Hydro-Electric Power Commission, Toronto, Ont.)

WATER PURIFICATION

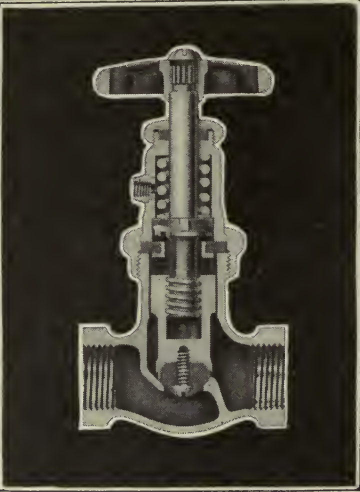
Two reprints from the **Journal of the American Water Works Association,** by Norman J. Howard, Bacteriologist in Charge, Filtration Laboratories, Toronto, Ont.: (1) July, 1922, ''Chlorination Prior to Filtration,'' 6 pp.; September, 1922, ''Modern Practice in the Removal of Taste and Odor,'' 17 pp. (Apply to author.)

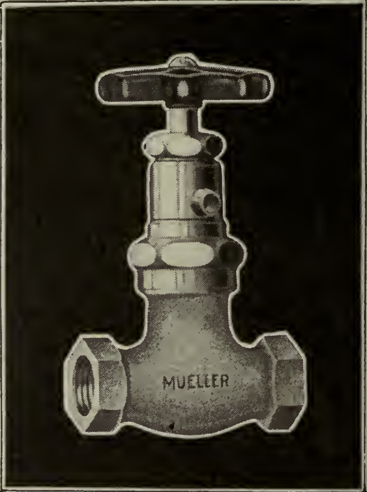
PUBLIC HEALTH SURVEY

''Public Health Survey of Lafayette, Indiana, and Tippecanoe County, Indiana.'' 1921. By Murray P. Horwood, Ph.D. Published by the Tippecanoe County Tuberculosis Association, Lafayette, Ind. 252 pp. Photographs and tables. A comprehensive study of the following subjects in relation to the health of the county: water-supply; sewerage and sewage disposal; refuse collection and disposal; milk supply; inspection of restaurants, food-stores and packing plants; school sanitation; school hygiene; organization and activities of the health department; hospital facilities; tuberculosis; vital statistics; analysis of county and city budgets; and housing. (Apply to the Association.)

CITY PLANNING IN BUFFALO

City-Facts, Volume I, Number 1, published by The Buffalo City Planning Association, Inc., October 1, 1922. 4 pp. Quarto. A bulletin to be issued as matters of importance to the Buffalo Plan develop. This number summarizes the publicity already issued regarding the Plan, and the steps of progress taken in carrying it out, and gives a statement of the Association's receipts and disbursements from January 12 to June 17, 1922. The front page displays the future program of the Association in the realization of the Plan. (Address the Association, Public Library Building, Buffalo, N. Y.)





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No. E-1600, here illustrated in both exterior and sectional view, is the product of years of experiment and experience, and combines many patented improvements.

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Prohibiting Parades in Streets

By A. L. H. Street

> **"Can a municipality validly prohibit the use of streets for a parade by Ku Klux Klansmen or other masked paraders? If so, please suggest a rough draft for an ordinance covering the subject, excepting clowns in bona fide circus parades."**
>
> **This interesting communication coming from a municipal official in a southwestern state raises a very important question concerning limitations on municipal power to restrict processions, etc., along the public thoroughfares of a city.**

WE cannot doubt the right of a city to adopt and enforce an ordinance forbidding a parade of masked men, although we have not yet been able to find a precedent of a court of high authority on the precise question. But our research suggests that particular care should be taken in drawing such an ordinance to avoid vesting arbitrary powers in administrative officers in such way as to purport to give unrestrained authority in the mayor or other official to grant a parade permit or withhold it. It would also seem that the ordinance should be drawn with a view to manifesting a purpose to promote the public peace and safety.

The antiquity of municipal measures designed to promote the public safety by forbidding disguised persons to go abroad is indicated by Calthrop's "Reports of Special Cases Touching Several Customes and Liberties of the City of London" (1670), where this quotation is made from "the statutes of the streets" "against annoyances": "No man shall use to go with Vizards [vizors], or disguised by night, under * * * pain of imprisonment."

A kindred regulation will be found in the codes or ordinances of modern cities, making it disorderly conduct for men to appear on the streets in women's apparel.

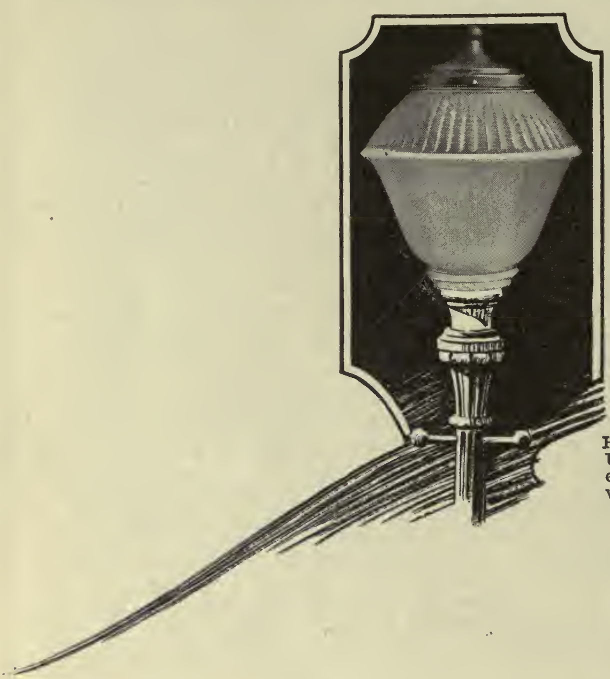
In 1873, the Kentucky Legislature met the necessity for dealing with the Ku Klux by adopting a law one section of which made it a felony "if two or more persons shall unlawfully confederate or band together, and go forth armed *or disguised*." This law, in slightly modified form, remains on the statute books of that commonwealth. While this law makes *unlawful* confederation an element of the offense, it is equally important to note that disguise is treated as the equivalent of going armed.

It will also be found that an act in force in Oklahoma, and perhaps other states, makes disguise a badge of unlawful purpose in defining criminal riots.

In determining the validity of an ordinance restricting parades and processions, it becomes necessary to draw a line between the constitutional right of societies, associations. etc., to make reasonable use of streets for the purpose of public demonstrations and the right of a local government to avoid breaches of the peace, riots, etc.

The weight of judicial authority appears to be reflected by the holding of the Illinois Appellate Court in the case of Rich vs. Napierville, 42 Ill. App., 222, that if public parades "do not threaten the public peace, or substantially interfere with the rights of others, every measure repressing them, whether by legislative enactment or municipal ordinance, is an encroachment upon fundamental and constitutional rights."

The law on this subject was clarified about thirty years ago by numerous cases in which the Salvation Army succeeded in knocking out in the courts ordinances designed to prevent use of the streets by familiar Salvation Army processions of singers, tambourine players, etc. In one case (Re Garrabad, 19 L. R. A., 585) the Wisconsin Supreme Court annulled an ordinance which purported to forbid street parades with shouting, singing, or music without obtaining permission from a city officer, but excepting from its provisions funerals, fire companies, state militia, and political parties having a state organization. The ordinance was held to unrea-



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The facts that make the above statement true—and many others—are set forth in our new book "Scientific Street Lighting—a Guide to Good Practise." Interesting, simple, authoritative. A numbered copy will be sent you free on request.

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sonably and unjustly discriminate. In reaching a similar conclusion under a similar ordinance, the Kansas Supreme Court said (Anderson vs. Wellington, 40 Kans., 173):

> "All by-laws made to regulate parades must fix the conditions upon which all persons or associations can move upon the public streets, expressly and intelligently; such conditions operating on all of the same class alike, and being reasonable in their requirements, and not oppressive in their operation, and must not give the power of permitting or restraining processions to an unregulated official discretion, and thus allow an officer to prevent those with whom he does not agree on controverted questions from calling public attention to the principles of their party or the objects of their organization in one of the most effectual methods known to associated effort."

In the case of Gribben, 5 Okla., 379, the Oklahoma Territorial Supreme Court annulled an ordinance forbidding "the making of any noise upon the streets or sidewalks of the city, by means of drums or musical instruments or otherwise, of such a character, extent and duration as to annoy others." The measure was held to be unauthorized by the city's charter and void as oppressive of common right.

One of the leading cases is that of Frazee (30 Northwestern Reporter, 72). It fully recognizes a right in societies to make political, religious and social demonstrations by parades, but also takes notice that parades are "capable of perversion to bad uses, and, when so perverted, may be dangerous * * * . There may be times and occasions when such assemblies may for a while be dangerous in themselves because of inflammable conditions among the population * * * . It is only when political, religious, social, or other demonstrations create public disturbance, or operate as nuisances, or create or manifestly threaten some tangible public or private mischief, that the law interferes."

Perhaps the most pertinent precedent to be found in the court reports is the decision of the Massachusetts Supreme Judicial Court, in the case of Commonwealth vs. Karvonen, '06 Northeastern Reporter, 846, wherein the constitutionality of a state law providing that no red or black flag, and no banner, ensign or sign having upon it any inscription opposed to organized government * * * shall be carried in any parade," was upheld. The Court ruled that in the light of the "well-recognized significance of the red flag, it may be assumed that the Legislature regarded it as the symbol of ideas hostile to established order, and decided that its carrying in parades would be likely to provoke turbulence or to menace the safety of travelers or citizens in general, or otherwise to interfere with the common welfare. Its determination in this regard cannot be pronounced by the courts contrary to the fundamental law, as being arbitrary or unreasonable, or as having clearly no relation to the ends for which the police power may be exercised."

Having in mind the legal principles referred to above, it seems to the writer of this article that some such ordinance provision as this would be valid:

"No person shall appear or parade upon the streets, alleys, or other public places of the city masked."

In the same, or a separate, ordinance it might be well to ordain:

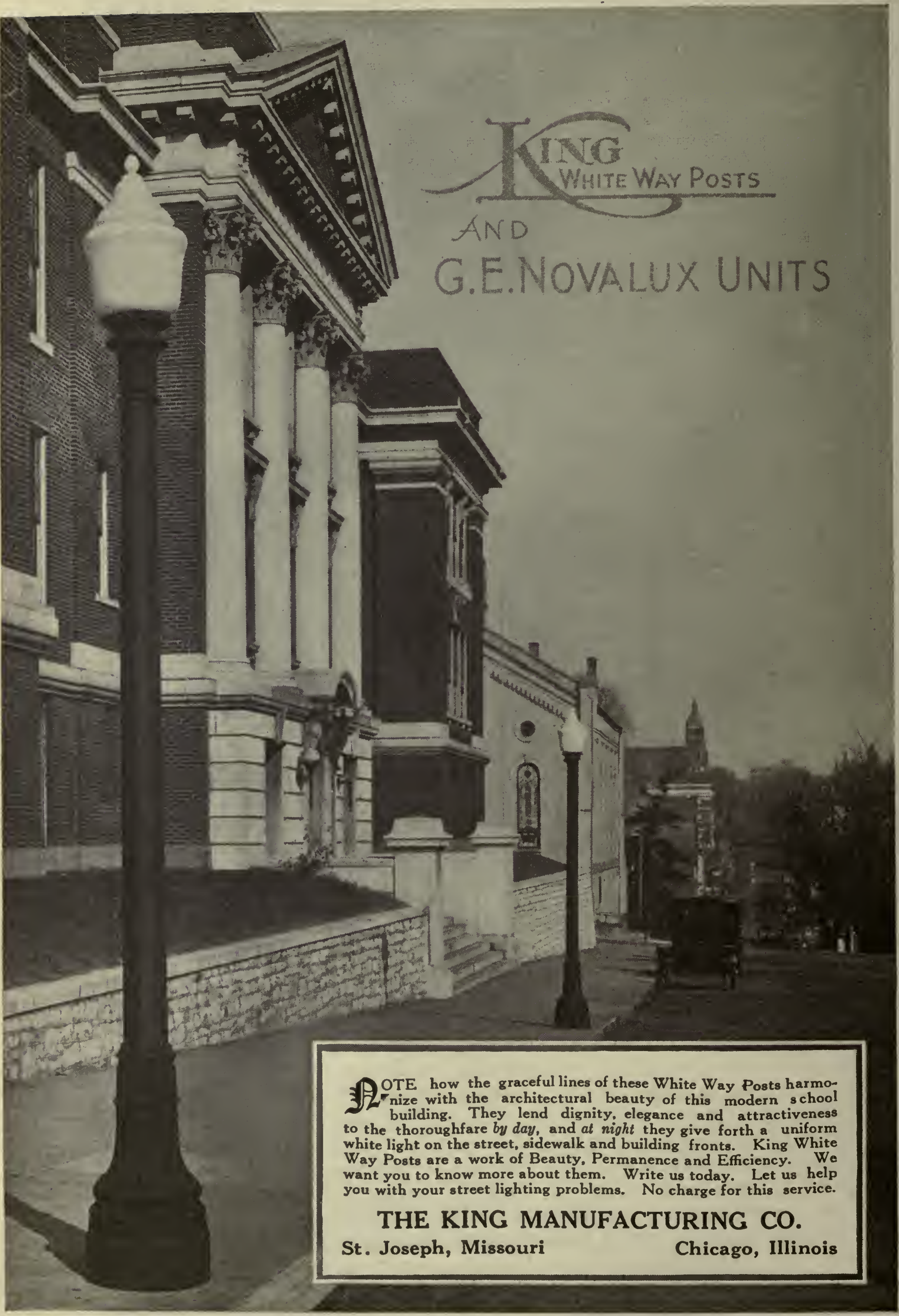
"No costume, flag, banner or sign which signifies illegal opposition to law, order or organized government, shall be worn or carried in any parade or procession, or in any public place in the city."

To this may be added the usual clause declaring any violation of the ordinance to be a misdemeanor and providing that, upon conviction, the offender shall be punished by specified fine or imprisonment or both.

We believe that it will jeopardize the validity of the ordinance to attempt to make exceptions, or to confer discretion on any municipal official to grant or withhold permits to hold masked parades. Some such provisions as are above outlined cannot seriously interfere with any reasonable use of the streets for public entertainments.

It is suggested that the title of the ordinance might read something like this: :

"An ordinance to promote public order, peace and safety, by prohibiting, under penalty, the appearance in public places or parading of masked persons, or the wearing or carrying of certain costumes, flags, banners or signs."



NOTE how the graceful lines of these White Way Posts harmonize with the architectural beauty of this modern school building. They lend dignity, elegance and attractiveness to the thoroughfare *by day*, and *at night* they give forth a uniform white light on the street, sidewalk and building fronts. King White Way Posts are a work of Beauty, Permanence and Efficiency. We want you to know more about them. Write us today. Let us help you with your street lighting problems. No charge for this service.

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The City's Legal Rights and Duties

Information for City Attorneys and Other Municipal Officers, Summarizing Important Court Decisions and Legislation

Conducted by A. L. H. Street, Attorney at Law

Substitution of Materials in Constructing Sewer Held Not to Invalidate Special Assessment

Holding that a departure from specifications in constructing a sewer did not vitiate local assessments levied to defray the cost, the Iowa Supreme Court said on an appeal of property owners in the case of Lundberg vs. Lake City, 187 Northwestern Reporter, 438:

"As evidence of fraud, the appellants rely upon a certain departure in the performance of the contract from the specifications. These required that in the construction of the manholes hard brick should be used. At the time of the construction the only hard brick that were available in the market were too hard for the purpose of such construction. The city and the contractor were confronted with the possibility of delay on such account. The situation was met by the use of softer brick, and the required hardness was provided for by the use of cement. This met the approval of the engineer both in advance of its use and after. The testimony is undisputed that the result is the full equivalent of that which was contracted for, and its cost was substantially the same. The situation was fully known and acquiesced in by the city officials and by the property owners. There was neither deception nor bad faith to any degree, nor was the result derogatory to the interests of the city or of the property owners. We agree therefore with the finding of the trial court that there was no fraud."

Power to Fix License Fee Cannot Be Delegated by Council

The generally recognized rule of law that charter authority vested in a city council to fix license taxes or fees cannot be delegated to the city commissioner or other official is followed by the Washington Supreme Court in the case of State vs. Scott, 196 Pacific Reporter, 576. Accordingly, it is decided that an ordinance purporting to forbid peddling without obtaining a license was void where it required a payment of such a license fee as the commissioner of public safety should deem equitable and proper, not less than $1.

City Held Liable for Damage Due to Breaking of Water Pipe

Allowing damages in favor of plaintiff in the case of Lyons vs. City of Lowell, 131 Northeastern Reporter, 860, on account of the bursting of a water-main in a street in front of his premises, the Massachusetts Supreme Judicial Court said:

"The city in furnishing water to its inhabitants for its own profit, was engaged in an undertaking commercial in character and was liable for its negligent acts. . . . And even if the defendant was careful in the inspection and testing of its water pipes and mains, the fault was in the original construction—that if proper care had been used when the pipes were laid the break would not have occurred."

Scope of Municipal Authorities' Power to Open Streets—Defined

"It is the established rule that the necessity for opening or extending streets, as well as the necessity for condemning rights of way for such purposes, is a matter which has been confided to the decision of the municipal authorities, and their judgment is conclusive upon the courts, unless it be made to appear that the use was palpably private, or the necessity for the taking was without any reasonable foundation." (Louisville & Nashville Railroad Co. vs. City of Louisville, Kentucky Court of Appeals, 227 Southwestern Reporter, 160.)

Territory Not Adapted to Municipal Purposes May Not Be Included in Incorporating

In the case of State vs. Masterson, 228 Southwestern Reporter, 623, the Texas Court of Civil Appeals declared to be invalid an attempt to incorporate the town of Sour Lake, where 76 acres of the 1,050 acres to be included in the corporation consisted of a developed oil field. The Court cites as precedents cases where attempts to embrace ranch and farming lands within municipal limits have been held to have been void.

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We believe we can prove by service records or by any test you might arrange, that Tiffin Street Flushers will clean more pavement in a day at less cost than any other machine. Also, the work accomplished will be better done.

If we can prove that, we've done all any city street department can want.

The two-motor-system design, and the operating technique, are the causes, but the result obtained is the matter of chief interest to you.

Let us submit evidence—
Do you want a demonstration?

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News for City and County Engineers, City Managers, Water-Works Superintendents, City Controllers, Park Superintendents, Purchasing Agents, and Others Interested in the Economical Construction and Efficient Operation of Public Improvement Undertakings

A Tested Hose Clamp

The "LaFrance" hose clamp, made by the American-LaFrance Fire Engine Co., Inc., Elmira, N. Y., was designed by a fireman with 23 years' experience in practical fire fighting. It enables a hose man to shut off the water at any place desired, whether inside the building or out, on the roof or on the ground, and can be carried in the belt as easily as an axe. It fills a long-felt want for a simple, easily operated shut-off and is equipment which should be carried on every piece of apparatus. This one tool does in a fraction of a minute, with no shouting of orders to a hydrant man or engineer 300 or 400 feet away, and without tracing back over a network of lines in snow, mud or water, what would take a long time to do in any other manner.

IN THIS WAY THE WATER CAN BE CUT OFF QUICKLY AT ANY PART OF THE HOSE LINE

When a line is laid into a hot fire and it is found that there is an obstruction in the pipe which is cutting down the stream, the hose clamp can be taken out, the line kinked, the pipe taken off, the obstruction knocked out, and the pipe replaced. This can all be done and a good stream secured in less than a minute.

It is a difficult job to carry a full line with pressure up a ladder. If a LaFrance hose clamp is put on and the pressure relieved, this is comparatively easy. It is possible even to break a coupling and let the water run out as the line is carried up, and then when the line is placed, connect the coupling and remove the clamp—and the line is in service. If single lines are laid and it is wished to change to a siamese, turret, pipe, or water-tower, or if it is necessary to change tips, replace a broken section or add more hose, all of this can be done instantly with the aid of the clamp. It entirely eliminates the danger of moving large streams and can be utilized in a hundred ways to save the time and strength of men which should be used in saving life and property.

How to Create Interest in Public Playgrounds

In congested city districts, as well as in suburban school districts, in order to create interest in public playgrounds, it is well, when instituting a movement for a new playground, to publish a statement of what is proposed, but only in a most general way. Do not go into detail, because you will find objectors. Demonstrate to the public that you can do something, then the public will agree with you. Have a public meeting addressed by some out-of-town well-known speaker who will sensibly present principles of the playground, but do not secure an emotional orator. Supply this speaker with local information well in advance so that he may make intelligent references. For instance, if there is a very greatly congested district in the city which is in need of a playground, he should be in a position to tell his hearers of this fact.

Demonstrate on a small scale the value of playgrounds by operating one or two in the summer vacation. The important thing is that the demonstration must be successful, and the success depends very largely upon the personality of the supervision. Through public presentation such as ministers' meetings, show some

Around the world on native lake asphalt

Views of the great Beira Mar Boulevard, Rio de Janeiro, Brazil, paved with Bermudez (Native-Lake) Road Asphalt.

On the world-famed boulevards of Rio de Janeiro—on the heaviest-traveled thoroughfares of its exposition grounds—are thousands of square yards of Bermudez (Native-Lake) Road Asphalt paving.

Whether for the final section of the great Beira Mar Boulevard—hewn from the living granite of Widow's Mount—or the wonderful Avenue of the Nations—the show street of the Centenario—***native lake asphalt paving was chosen in preference to all others.***

The tremendous superiority of native-lake asphalt—its ability to withstand the ravages of weather and traffic—***have been definitely proved*** on thousands of streets and roads in all parts of the world.

Exposed for centuries to the rigors of tropic heat and tropic storms, Bermudez Road Asphalt has weather and wear resistance built into it—is seasoned and toughened for long-lasting, low-cost service on modern highways.

Write at once for booklets describing this remarkable world-old, ages-tested asphalt.

The Genasco Line includes asphaltic roofing, flooring, paints and allied protective products. Write for descriptive matter.

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"IT STAYS PUT"

CHILDREN THOROUGHLY ENJOY PUBLIC PLAYGROUNDS

practical aspect of playground benefits. Maintain constant publicity through the press. Personally invite and conduct visits of those who are interested or those whom you hope to interest. Give special attention to the prominent city professional and business men and get the city council and the school board interested. Through these individuals and officials issue a report at the close of the season, making it a very simple, brief statement of what you have done, giving statistics, facts, expenses, benefits to children and the community, quoting what the policemen say, the judges, the city officials and the prominent citizens.

To promote a playground in a suburban community, study the field with a view to its need of playgrounds and the possible locations for playgrounds. Find out the public or semi-public locations, such as school yards, parks, property that is given to the city for non-payment of taxes, property that is exempt from taxes because it belongs to the city. Locate reclaimed areas in the city, such as marshes, river fronts, vacant lots and other parts of the city not used. Secure and maintain a map of the city, and on that map outline all vacant spaces. Ascertain the populations of the different sections of the city, thus finding out the congested and the sparsely populated districts. Locate the most needy sections of the city, that is, the sections where there is the greatest juvenile delinquency or crime, and study the tendency of the growth in different parts of the city. It is well to determine the radius of influence of the playground and to interest groups such as civic clubs, commercial organizations, churches, the Y. M. C. A., etc.

These interesting suggestions are abstracted from a pamphlet entitled "Public Playgrounds," published gratis by the Everwear Manufacing Company, Springfield, Ohio.

New Research Engineer for Gamewell Company

The Gamewell Fire Alarm Telegraph Company, Newton Upper Falls, Mass., has recently announced the appointment of F. A. Raymond as engineer in charge of research. Mr. Raymond has been with the National Board of Fire Underwriters for 18 years. During his service with the National Board, first as a field engineer and then at headquarters in New York, he has made investigations and reports on fire departments, fire alarm systems, and electrical and structural conditions in most of the larger cities and many of the smaller cities in the United States. In 1905 and 1908 he made investigations and reports on the New York Fire Department and fire alarm system. He has made special investigations of the fire alarm systems in Cleveland, Los Angeles, Evansville and Albany, and in more recent years in Chicago, Kansas City, Wichita and other places. During the war he prepared specifications and plans for fire alarm protection in army camps, navy yards and yards of the Emergency Fleet corporation.

As a member of the Signaling Committee of the National Fire Protection Association he had an active part in framing the new rules for municipal fire alarm systems. He is a member of the American Institute of Electrical Engineers, a life member of the Yale Engineering Association, and a member of the National Electric Code and Radio Committees of the National Fire Protection Association and the Committee on Telegraphy and Telephony of the American Institute of Electrical Engineers.

Mr. Raymond takes up his new duties on December 1 and will be located at the Gamewell factory at Newton Upper Falls, Mass.

Charleston, W. Va., to Have Refuse Destructor

On October 27 a special committee appointed by the City Council of Charleston, W. Va., with full power to act on bids, and acting with its advisory engineer, Samuel P. Greeley, of Chicago, Ill., decided to install a Balmer refuse incinerator. Nine competitive bids were considered. The successful contracting firm is the Markman Engineering Company, Chicago, which is working under a special agreement with the Balmer Corporation, 150 Nassau Street, New York City, licensees of the Balmer system. The designs, building plans and all engineering details are being prepared by the George A. Johnson Company, Inc., 150 Nassau Street, New York City.

The capacity of the new incinerator plant is to be 70 tons daily. It will consist of two batteries of three cells each, housed in a substantial, attractive building, complete, with an animal crematory and a chimney 125 feet high. The site selected is practically in the center of the city, being on the bank of the Elk River on Estill Street.

An especially interesting feature of the plant is the Balmer pneumatic system of handling garbage and mixed refuse in storage. The plant is guaranteed to work without auxiliary fuel and to create no odors or other nuisance.

Servicised Expansion Joints

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OF THE ROAD

Old principles of expansion joint provide fillers of solid asphaltic content or impregnated fibre and asphalt in an elastic mass. ¶ The fundamental purpose of the filler is to re-occupy the space left by two contracting slabs. ¶ Solid asphaltic or impregnated fibrous materials contract, concrete slabs likewise contract on cooling. ¶ Three contracting bodies cannot occupy the same space as when expanded. Servicised Joints *expand* when the concrete slabs contract. ¶ This is the key to a permanent waterproof joint; a correct answer to the problem of expansion between two contracting bodies. Unimpregnated cellular fibrous matter in Servicised Joints brings about this re-expansion after compression is relieved.

Trapped Under Compression: The print to the right is an example of oozing under compression. Due to the hard asphalt surfacing over the concrete base, the traffic could not carry the surplus away because it was locked in between the asphalt surfacing and base. The force was great enough, however, to form bulges in the hard asphalt surface.

Write Us About Your Expansion Joint Problems

A Bituminous and Impregnated Fibre or Elastic Mass: No better proof of indiscriminate oozing. No better illustration of the need of expansion joint of the proper kind. The action in this instance resembles that of paste in a tube being squeezed with one side open. Action of this kind causes tremendous waste, without resulting in good. Servicised Joints will prevent this.

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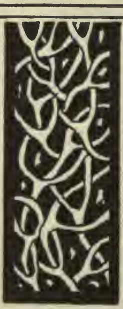

TYPE B
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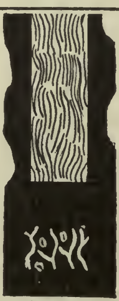
25% Cellular Fibre



TYPE D
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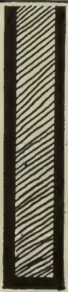
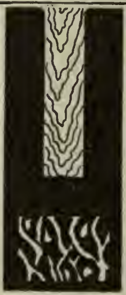
Non-Raising



TYPE C
Felt Center—Coated Sides—Sidewalk Joint



TYPE AA
3/16 Veneer Core

Four Types of Servicised Expansion Joints in Which the Oozing Tendency Is Controlled

Servicise the Crevice and Save the Road

An Improved Surface Heater for Asphalt Repairs

The repairing of worn-out asphalt pavements and the surfacing of old brick and stone pavements are greatly facilitated by first heating the surface of the pavement to be worked upon, thus making it possible to secure an adequate bond between the surface and the new bituminous material to be applied. The Equitable Asphalt Maintenance Company, 1901 Campbell Street, Kansas City, Mo., has recently brought out an improved model of its Lutz surface heater. The most important feature of this improved machine is that it is practically foolproof. The use of steam has been eliminated entirely, so that no water is required to fill the boiler, thus doing away with one of the cares of operating the old machines. The heating hood slides along on the ground, saving about one minute in the operating time for each heat separate.

THIS MACHINE SPEEDS UP REPAIRS ON ASPHALT STREETS

The machine has a heavy steel frame carrying all the working parts, which consist of a gasoline engine with radiator, hood, gasoline tank, operator's seat, air blower, air tank, fuel oil tank, air heating chamber with hood, and hydraulic hoist. The whole machine is mounted on four iron wheels with wide steel tires. The surface heater hood is 5 by 9 feet, made of steel plates with the necessary baffles, skids, connecting rods and lifting chains. It is attached to the air heating chamber just back of the rear wheels and is so arranged that when the machine is being operated the hood will slide forward or backward on the street surface without its being necessary to raise the hood. In starting the machine on the job for the day's work, the operator cranks up the engine, starts the air blower, lights the oil burner, and is ready for operation. The surface heater hood is lowered over the space to be heated and allowed to stand until the surface is heated to the proper temperature, then the machine is moved forward the proper distance, about five feet, the hood sliding along on the pavement. From one to two minutes is required to make a heat, depending on the kind of material or surface to be heated. The capacity of this machine is between 1,000 and 1,500 square yards of asphalt pavement heated for repair per 8-hour day.

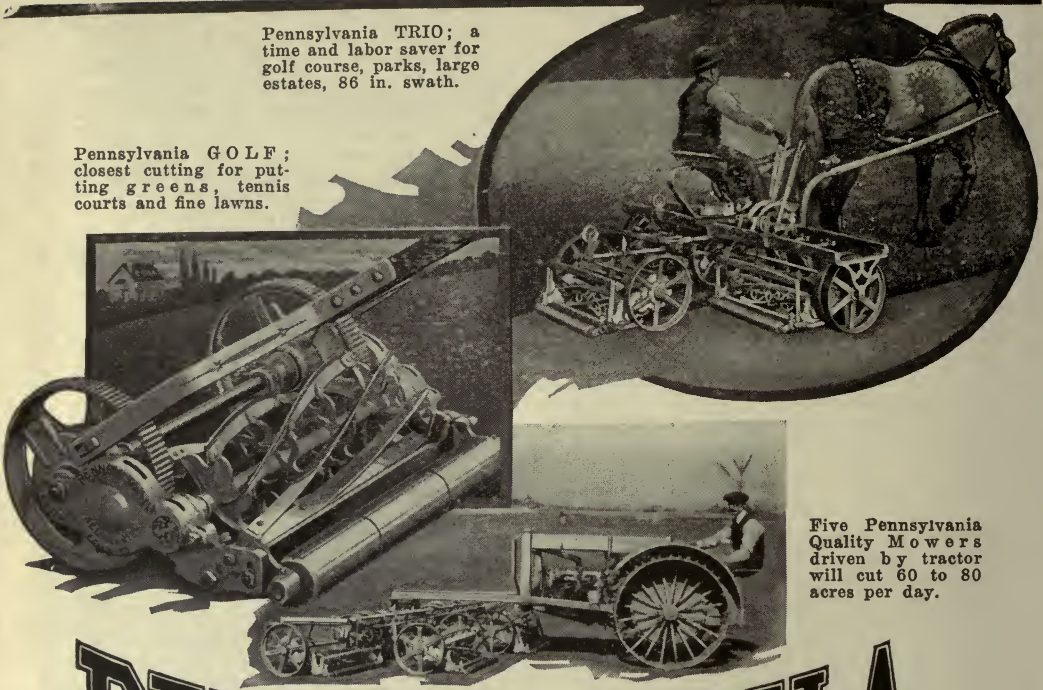
National Paving Brick Manufacturers Association Elects New Secretary

The National Paving Brick Manufacturers Association, Engineers Building, Cleveland, Ohio, has elected Edward E. Duff, Jr., as Secretary of the Association. He will take office on or about January 1. Maurice B. Greenough, retiring secretary, will become associated at that time with W. M. Lasley, of Chattanooga, Tenn., in various enterprises, including the manufacture of paving brick.

New Garbage Incinerator for Philadelphia

The city of Philadelphia has recently awarded a contract for the construction of a garbage and refuse incinerator to have a capacity of 280 tons per day. This is the first unit of incineration to be installed by the city and will be located at Ramona and G Streets, approximately 6 miles northeast of the City Hall. The city now operates a reduction plant wherein the greater portion of its garbage is disposed of, and it is not the intention to replace this reduction plant with an incinerator, but rather to provide for the disposal of combustible rubbish together with such garbage as it may be advantageous to dispose of through a shortening of haul as against delivery to the present reduction plant.

Before making decision with respect to the type of incinerating plant to be installed, an extensive study was made by the city to deter-



Pennsylvania TRIO; a time and labor saver for golf course, parks, large estates, 86 in. swath.

Pennsylvania GOLF; closest cutting for putting greens, tennis courts and fine lawns.

Five Pennsylvania Quality Mowers driven by tractor will cut 60 to 80 acres per day.

PENNSYLVANIA *QUALITY* LAWN MOWERS

USE them singly, hook them up in gangs, pull them by horse, or push them by tractor, Pennsylvania *Quality* mowers will prove the speediest, most effective and longest-lived lawn mowers.

Pennsylvania *Quality* Lawn Mower parts are not only interchangeable, but are made from the most durable and efficient materials, by highly specialized skill, and are designed to give longest and most satisfactory service.

PENNSYLVANIA LAWN MOWER WORKS, Inc.

1615 North 23rd Street **Philadelphia**

mine the advantages of the various types of incinerators, with respect to both operation and maintenance. The specifications when formulated called for four furnaces, each having a capacity of 70 tons per day, to be so designed and constructed as to permit of separate or simultaneous operation, and to be capable of burning material containing both garbage and combustible rubbish in proportions approximating 65 and 35 per cent by weight respectively, as it was contemplated that a mixture of the two classes of waste would contain approximately 47 per cent moisture and 23 per cent combustible material.

The furnaces are required to operate on the above mixture of material without the addition of fuel to assist combustion, and under a guarantee that an average temperature of 1,400 degrees Fahrenheit will be maintained in the combustion chamber. It is also required that the residue shall be thoroughly burned, that the furnaces shall not give off obnoxious gases, and that the smoke from the chimney shall not have a degree of density greater than that indicated by Chart No. 1 of Ringelmann's Smoke Scale.

The furnaces are to be so designed and constructed that delivery can be made from collection equipment directly to the charging bin above the furnaces. The refuse is fed to the furnace by means of a mechanical charging container controlled from the stoking floor. Each furnace will have four grates with separate ash-pits and a furnace chamber common to all the grates, so as to assure assistance from the fire upon any one grate in the burning of the refuse upon the other grates. The gases from the four grates of each furnace are passed into the chamber where final combustion takes place.

Each furnace is equipped with forced draft fans and ducts so constructed that the air supply to each grate may be separately controlled. The air duct for this forced draft is taken from the building, thus insuring mechanical ventilation, and is pre-heated by the waste heat from the combustion chamber. The pre-heating of the air reduces the volume required for combustion, and by utilizing the waste heat the burning of the material is materially assisted. The residue in the form of clinker and ash is drawn out of the stoking doors and dropped through chutes into ash-cars located in a tunnel underneath the stoking floor.

The furnaces are of the Sterling type and similar to those installed by the city of Toronto six years ago. The Toronto furnaces have operated continuously during this period in a residential section of the city without giving cause for complaint or objection from any source, and the labor and maintenance factors show them to be economical in operation. The contractor installing these furnaces for the city of Philadelphia is the C. O. Bartlett & Snow Company of Cleveland, Ohio.

The Necessity for Water-proof Joints in Sewer Pipe

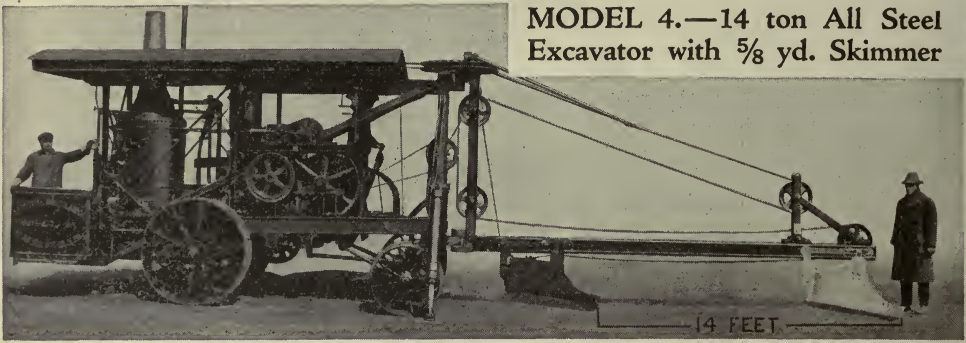
The problem which confronts every municipality owning or contemplating a sewer system resolves itself into two items of cost—construction and maintenance.

A SEVERE TEST FOR A SEWER PIPE JOINT

Under the head of maintenance comes the cost of pumping, wherever it may be necessary to bring the sewage to a common point for treatment. To keep down this cost, it is essential that nothing but the actual sewage be pumped, and to accomplish this the prevention of infiltration is of primary importance. Nearly everyone familiar with sewer construction is aware of the difficulty of making tight joints with cement. The causes of failure in cement joints may be summed up as follows: (a) considerable water percolates through the cement itself when it is in a porous condition; (b) any settlement of the pipe or deflection caused by uneven back-fill either breaks the joint or the pipe because of the rigidity of the joint; (c) roots of shade trees grow into the joints with apparent ease and, once in a sewer, will rapidly and sometimes completely obstruct it; (d) in laying joints with water in the trench, it is extremely difficult to keep the cement in the joints until it is sufficiently set to make a good joint.

STEAM TRADE MARK KEYSTONE REGISTERED U. S. PATENT OFFICE SHOVELS

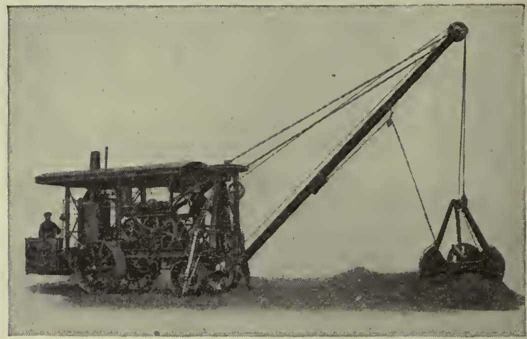
MODEL 4.—14 ton All Steel Excavator with ⅝ yd. Skimmer



The KEYSTONE is a highly versatile traction steam shovel with all the efficiency of specialized design, usable with three different interchangeable scoops—*Skimmer, Ditcher and Clam Shell*—for Road Grading, Trenching, Back-Filling, Cellar Digging, Pit Mining, Loading, Unloading and Handling Materials. Can be equipped with electric motor drive for use in buildings. Saves first cost, moving cost and upkeep and is readily sold or rented for any sort of excavation job. A reliable road shovel of remarkable adaptability to other uses.

The heavy Keystone Skimmer Bucket, ⅝ yd. capacity, has a horizontal crowd of 14 feet and fills itself at one shot in a six inch cut. It leaves a smooth surface, finished to grade and thus dispenses with costly hand-trimming. Shallow digging in hard material—old macadam, paving blocks, concrete and asphalt—is keystone work.
Made in two sizes: Model 3, 10 ton and Model 4, 14 ton. The good Keystone Digging Ideas in our catalogs and advertising sheets have made money for 1500 Contractors in the United States. Ask for them.

DITCHER



Model 4, with Boom extension and ½ yd. Clam Shell Bucket

Keystone stands on the solid. No cribbing needed, no danger from cave-in, of machine sliding into excavation. Any width or depth to 20 feet. There is 4 feet of water in this 12 foot ditch. The Keystone is adapted for hard going among roots, boulders, etc., and cleaning out blasted rock.

Keystone Driller Company Beaver Falls, Pa.

170 Broadway, New York Monadnock Block, Chicago Joplin, Mo.

7-D-4

The Pacific Flush Tank Company, 4241-43 East Ravenswood Avenue, Chicago, Ill., claims that its water-proof jointing compounds, "Jointite" and "Filtite," are advantageous because the melting points are low and at the same time are high enough to make cooling as rapid as possible. The compounds have sufficient weight so that they adhere firmly to the pipe, and are water-proof and chemically resistant to liquids found in sewage and ground water. They are flexible to such an extent that disturbance of alignment may take place and the joints remain intact without causing a crack in the pipe. Furthermore, the compounds are claimed to be non-porous.

When these compounds are used in the field, the pipes are set in the trench and lined to grade with the bell and spigot together in the usual way, and jute-caulked evenly and tightly, leaving a depth of 1½ inches for the material. An asbestos or other snake runner is slightly greased and smeared with wet clay to prevent the hot material from sticking to it, and is passed around the pipe and clamped tightly close to the bell, leaving a triangular opening into which to pour the compound. If clay is handy, it is a good plan to smear it around the runner and pipe to prevent possible leakage of the fluid material by assisting in holding the runner close up to the bell. The joint is then poured full and allowed to cool, after which the runner may be removed and the joint is complete.

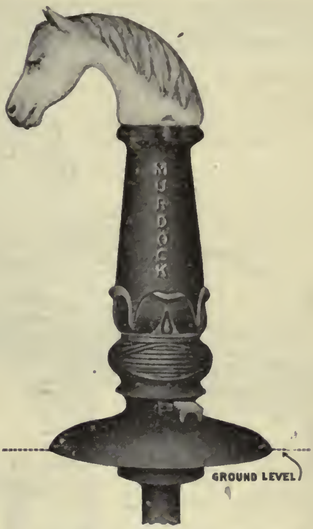
Joe Long with Austin-Western

Joe Long, who has been well known to the road-building fraternity during the past decade, and as a writer and speaker on community development and highway administration, has become Sales Manager of the Motor Pick-up Sweeper Department of the Austin-Western Road Machinery Company, Chicago, Ill. As the founder, and for several years editor, of *The Road Maker,* Mr. Long established a broad acquaintance with road builders throughout the country.

Drinking Fountains for Horses and Autos

The accompanying illustration shows a complete installation of a Murdock Horse-Font, which has many advantages for municipal use. It is operated only when necessary, and so meets with the approval of water-works engineers who are opposed to water-troughs and all continuous-flow fountains. By simply stepping on the pedal, a bucket can be quickly filled and a horse given a drink at any time, summer or winter, day or night. It provides clean water and does away with the old trough, which spread disease among horses fully as much as the common drinking cup did among human beings.

These fountains have been found a great convenience to autoists in refilling their radiators. Many large cities have installed hundreds of these anti-freezing horse fountains made by the Murdock Manufacturing & Supply Company, Cincinnati, Ohio, for use in the crowded districts and places adjacent to freight depots and on long hills.



A ROADSIDE FOUNTAIN FOR HORSE AND AUTO

Jennings Opens Sales Office

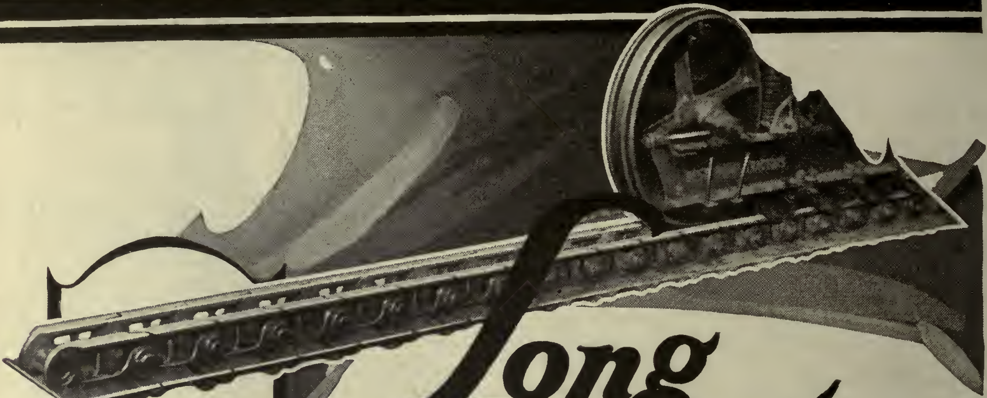
C. A. Jennings, District Sales Manager for Wallace & Tiernan, Inc., at Chicago, Ill., resigned November 1. He has taken offices in the Monadnock Bulding, Chicago, and will act as manufacturer's representative for the Michigan Valve & Foundry Company of Detroit, the Roberts Filter Manufacturing Company of Darby, Pa., the Universal Destructor Company of Pittsburgh, Pa., and other firms manufacturing water-works and sanitary engineering equipment.

Williams Joins Technical Advisory Corporation

Frank M. Williams, who is completing his fifth year as State Engineer of New York State, has announced that he has joined the Technical Advisory Corporation, consulting engineers, 132 Nassau Street, New York City. Mr. Williams will be one of the Corporation's active principals and will specialize in advising on matters pertaining to the development of water-power, canal construction, highway and pavement construction, the value of public utilities, and the development of railway and marine terminals.

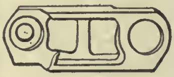
A New Fire Department Supply Company

The organization of the McNeil & Olson Company, Dayton, Ohio, has just been announced. This company will furnish everything that a fire department needs or uses, with the exception of motor fire apparatus. The officers are T. W. McNeil, President; Albert T. Olson, Treasurer; and Charles W. Gordon, Secretary.



Section of assembled track

Long TRACK LIFE



Track Link

Track Spool

Track Pin

Heavy Cotter for Track Pin

THE MATERIALS FIRST, then the treatment and design, are the factors which make the tracks on Best Tractors last.

Heat treated links—hardened spools and pins—accurately machined and assembled, form properly aligned tracks that successfully withstand hard work.

Investigate the tracks on Best Tractors—ask any Best owner—or write us for complete details of Best Tractors.

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